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and Controllers
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Indicate! Monitor! Control! Record! Test!
Measure! Display! with . . .

Simpson®

DIGITAL ANALOG

DIGITAL and ANALOG INSTRUMENTATION



KATY INDUSTRIES

(312) 697-2260 • Cable SIMELCO • Telex 72-2416

ELECTRICAL EQUIPMENT
AND PRODUCTS GROUP

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SIMPSON ELECTRIC COMPANY, the leading manufacturer of panel meters and test equipment for electrical and electronic applications, offers a selection of over 2,000 stock ranges, sizes and types of analog, digital and Ana-Led panel meters.

Simpson panel meters, chart recorders, meter relays, controllers and the widest variety of test equipment are all available for off-the-shelf delivery from electronic and electrical distributors throughout the world.

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Simpson® Digital Panel Meters

NEW SERIES 2840 4½-DIGIT DIGITAL PANEL INSTRUMENTS

New series of self-contained panel-mounted 4½-digit DPMs, especially suited for system applications where extra 0.02% accuracy and 10 µV resolution are needed.

Utilize the latest solid-state integrated circuit electronics, with 0.43" LED display.

- Bright red 0.43" LED display
- 4½-digit (19999 counts) readout
- Automatic polarity indication and zero
- 0.02% of reading accuracy on DC V ranges
- State-of-the-art LSI circuitry
- 120/220/240 V AC, 50-400 Hz or 5 V DC operation
- Input/output edge connector included
- Fits standard 1.682" x 3.622" cutout. With adapters, fits IEC/DIN 1.77" x 3.622" or 1.682" x 3.92" cutouts

AVAILABLE ON SPECIAL ORDER

- Display hold
- Programmable decimal point
- Custom ranges
- BCD output

SPECIFICATIONS Models 2840, 2841

Accuracy: (At Reference Conditions)

DC Voltage: $\pm(0.02\%$ of reading + 1 digit)

DC Current: $\pm(0.05\%$ of reading + 1 digit)

Temperature Coefficient:

DC Voltage: $\pm(0.003\%$ of reading + 0.1 digit)/°C

DC Current: $\pm(0.01\%$ of reading + 0.1 digit)/°C

Sensitivity: 10 µV for 200 mV unit; 10 nA for 200 µA unit

Resolution: One part in 20,000

Input Bias Current: 100 pA maximum at reference conditions

Full Range Step Response: (to rated accuracy) 1 second maximum

Normal Mode Rejection: 60dB minimum at 60 Hz

Common Mode Rejection: 120dB minimum (2840 only) (with 1 K Ω unbalance at 60 Hz)

Rated Circuit-To-Ground Voltage: (Maximum Common-Mode Voltage) 250 V DC between either input terminal and power line ground (2840) or V DC terminals (2841)

Conversion:

Technique: Charge balance

Rate: 2 samples per second, nominal

Display:

Type: 7-segment, high-efficiency light-emitting-diodes with 0.43" high numerals

Number of Digits: 4 full digits plus overrange "1" digit

Polarity: Automatic, with "-" indication; "+" indication implied

Out-of-Range: All digits blink

Decimal Point: Fixed with range

Power Requirements:

2840: 120, 220 or 240 V AC $\pm 10\%$, 50 Hz to 400 Hz, 4 VA

2841: 5 V DC, $\pm 5\%$ at 750 mA



Temperature Range:

Operating: 0°C to +55°C

Storage: -40°C to +60°C

Relative Humidity: 0 to 85%, non-condensing

Reference Conditions:

Temperature: +23°C, $\pm 2^\circ\text{C}$

Atmospheric Pressure: 575 to 800 mmHg

Relative Humidity: 30 to 60%

Warm-up Time: 15 minutes at reference conditions

Weight: 1 lb. (435 g) approx.

Dimensions:

Instrument: 3.9" wide x 1.93" high x 4.27" deep (99x49x109 mm)

Panel Cutout: 3.622 x 1.68" (92x42.72 mm)

With Optional Adapters: 92 x 45 mm (3.622x1.77") for DIN or IEC cutout 99.57 x 42.72 mm (3.92x1.68") for other domestic cutout

Model 2840 120/240 V AC input, 0.43" LED display, complete with panel mounting clips, edge connector and manual **\$189.45** each

Model 2841 5 V DC input, 0.43" LED display, complete with panel mounting clips, edge connector and manual **189.45** each

STOCK RANGES

DC Voltage:				CATALOG NUMBERS	
Ranges	Maximum Indication	Input Resistance	Overload Protection	Model 2840	Model 2841
200 mV	± 199.99 mV	100 M Ω	250 V	24800	24826
2 V	± 1.9999 V	100 M Ω	250 V	24801	24827
20 V	± 19.999 V	10 M Ω	250 V	24802	24828
200 V	± 199.99 V	10 M Ω	250 V	24803	24829

DC Current:				CATALOG NUMBERS	
Range	Maximum Indication	Voltage Drop	Maximum Input Current	Model 2840	Model 2841
200 µA	± 199.99 µA	200 mV	20 mA	24804	24830
2 mA	± 1.9999 mA	200 mV	20 mA	24805	24831
20 mA	± 19.999 mA	200 mV	100 mA	24806	24832
200 mA	± 199.99 mA	200 mV	1 A	24807	24833

Simpson® Digital Panel Meters



Model
2865/2866
0.43" LED
Display

SERIES 2865 DPM High performance at a low price

New price/performance breakthrough makes it possible to offer a digital panel meter for a price which rivals that of a quality analog meter. A single LSI chip contains all analog to digital circuitry and provides new reliability yet reduces cost. These compact rugged units are available for 5 V DC or 120 V AC input power. All have 0.1% accuracy and 0.43" LED display. Adapters are available for mounting in IEC/DIN cutouts or 1.682" x 3.92" cutouts.

- Bright red 0.43" LED display
- 3½ digit (1999 counts) readout
- Automatic zero and polarity indication
- 0.1% of reading accuracy
- State-of-the-art LSI circuitry
- 120/240 V AC, 50-400 Hz or 5 V DC operation
- Fits standard 1.682" x 3.622" cutout. With adapters, fits IEC/DIN 1.77" x 3.622" or 1.682" x 3.92" cutouts
- Input/output edge connector included

AVAILABLE ON SPECIAL ORDER:

- Remote decimal point
- Custom DC ranges

SPECIFICATIONS Models 2865, 2866

Accuracy: $\pm(0.1\%$ of reading + 1 digit) at reference conditions

Temperature Coefficient: $\pm(0.01\%$ of reading + 0.05 digit) per °C, from 0°C to 55°C

Sensitivity: 100 μ V for 200 mV unit; 10 nA for 20 μ A unit

Resolution: One part in 2,000

Input Bias Current: 10 pA maximum at reference conditions

Response Time (to rated accuracy): Less than 800 milliseconds

Normal Mode Rejection: 50 dB minimum at 60 Hz

Common Mode Rejection (with 1 K Ω unbalance at 60 Hz): 90 dB minimum

Rated Circuit-To-Ground Voltage (Maximum Common-Mode Voltage): 250 V DC between either input terminal and power line ground (2865 only)

Conversion:

Technique: Up-down integration

Rate: 2.5 samples per second nominal

Display:

Type: 7-segment, light emitting diodes with 0.43" high numerals

Number of digits: 3½ full digits

Polarity: Automatic, with "—" indication, "+" indication implied

Out-of-Range: All digits blank, except "1" digit above 1999 counts

Decimal Point: Fixed with range

Power Requirement:

Model 2865: 120 or 220-240 V AC $\pm 10\%$, 50 Hz to 400 Hz, 3 VA

Model 2866: 5 V DC, $\pm 5\%$ @ 200 mA

Temperature Range:

Operating: 0°C to +55°C

Storage: -40°C to +60°C

Relative Humidity: 0 to 85%, non-condensing

Reference Conditions:

Temperature: 23°C $\pm 2^\circ$ C

Atmospheric Pressure: 575 to 800 mm Hg

Relative Humidity: 30 to 60%

Warm-Up Time: Less than 2 minutes at reference conditions

Dimensions:

Instrument: 3.9" wide x 1.93" high x 4.27" deep (99 x 49 x 109 mm)

Panel Cutout: 3.622" x 1.68" (92 x 42.72 mm)

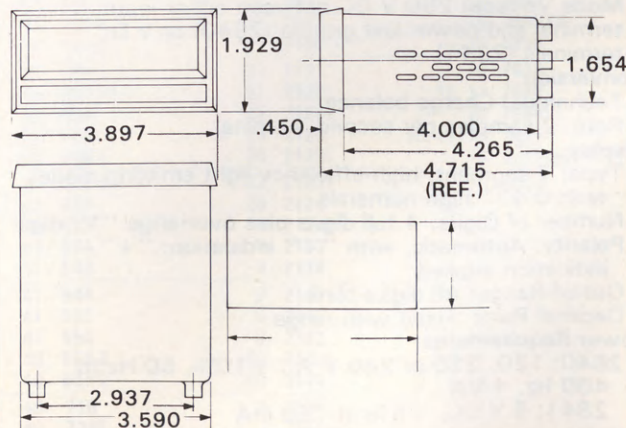
With Optional Adapters: 92 x 45 mm (3.622" x 1.77") IEC or DIN; 99.57 x 42.72 mm (3.92" x 1.68") popular domestic

Weight: Approximately 1 lb. (453 g)

STOCK RANGES

DC Voltage:				CATALOG NUMBERS	
Range	Maximum Indication	Input Resistance	Overload Protection	Model 2865	Model 2866
200 mV	± 199.9 mV	≥ 100 M Ω	350 V	24500	24600
2 V	± 1.999 V	≥ 100 M Ω	All Ranges	24501	24601
20 V	± 19.99 V	10 M Ω		24502	24602
200 V	± 199.9 V	10 M Ω		24503	24603
DC Current:				CATALOG NUMBERS	
Range	Maximum Indication	Maximum Input Current	Voltage Drop, FS	Model 2865	Model 2866
20 μ A	± 19.99 μ A	20 mA		24504	24604
200 μ A	± 199.9 μ A	20 mA	200 mV	24505	24605
2 mA	± 1.999 mA	20 mA	All Ranges	24506	24606
20 mA	± 19.99 mA	100 mA		24507	24607
200 mA	± 199.9 mA	1 A		24508	24608

DIMENSIONS FOR DIGITAL PANEL METERS



Simpson® Digital Panel Meters

DELUXE SERIES 2850 DPM with CMOS BCD output capability and options for custom applications

The 2850 series of digital panel meters are compact, ruggedly-built DPMS that offer either Planar gas discharge or LED displays. Both types are available with 5 volts DC or AC line input power. Adapters are available for mounting in IEC/DIN cutouts as well as in 1.682" x 3.92" cutout.

All units have 0.1% accuracy and BCD output is standard. Specials including AC ranges are available.

- 0.55" planar gas discharge display: Models 2850 and 2851
- 0.43" LED display: Models 2852 and 2853
- 3½ digit readout
- 0.1% of reading accuracy
- Highly reliable LSI circuitry
- Automatic zero and polarity
- BCD output is standard
- 120/240 V AC, 50-400 Hz or 5 V DC operation
- Input/output edge connector included
- Fits standard 1.682" x 3.622" cutout. With adapters, fits IEC/DIN 1.77" x 3.622" or 1.682" x 3.92" cutouts

AVAILABLE ON SPECIAL ORDER:

- AC voltage and current ranges
- DC zero offset
- Display hold
- Programmable decimal point
- Custom ranges

SPECIFICATIONS Models 2850, 2851, 2852, 2853

Display:

Type: 7-segment, planar gas-discharge with 0.55" high numerals or 0.43" 7-segment LED

Number of Digits: 3½

Polarity: Automatic, with "+" or "-" indication

Out-of-Range: All digits blink

Decimal Point: Fixed with range

Accuracy: ±(0.1% of reading + 1 digit), +15° to ±35°C

Temperature Coefficient: ±(0.01% of reading + 0.05 digit) per °C, from 0°C to +55°C

Sensitivity: 100 µV for 200 mV unit; 10 nA for 20 µA unit

Resolution: 1 part in 2,000

Input Bias Current: 40 pA maximum at reference conditions

Response Time (to rated accuracy): < 800 msec.

Normal Mode Rejection: 55 dB minimum at 60 Hz

Common Mode Rejection (with 1 KΩ unbalance at 60 Hz):

Model 2850, 2852: 90 dB minimum

Model 2851, 2853: 60 dB minimum

Rated Circuit-to-Ground Voltage (Maximum Common Mode Voltage): 350 V DC between either input terminal and power line ground (2850, 2852) or 5 V DC terminals (2851, 2853)

Conversion:

Technique: Charge-balance

Rate: 4 samples per second, nominal

Power Requirement:

Model 2850, 2852: 120 or 240 V AC ± 10%, 50 Hz to 400 Hz, 4 VA

Model 2851, 2853: 5 V DC, ± 5% @ 700 mA

Temperature Range:

Operating: 0°C to +55°C

Storage: -40°C to +60°C

Relative Humidity: 0 to 90%, non-condensing

Reference Conditions:

Temperature: 23°C ± 2°C

Atmospheric Pressure: 575 to 800 mm Hg

Relative Humidity: 30 to 60%

Warm-Up Time: < 2 min. at reference conditions



Models
2850/2851
0.55" Planar Gas
Discharge Display



Models
2852/2853
0.43" LED Display

BCD Outputs:

Logic Form: CMOS compatible, positive logic 1-2-4-8 code, parallel bit, serial in digit format

Logic Levels: "0" = 0 to +0.4 V DC

"1" = +2.4 to +5.25 V DC

Multiplex Sequence: A1 (LSD), A3, A2 and A4 (MSD)

Weight: 1 lb. (435 g) approx.

Dimensions:

Instrument: 3.9" wide x 1.93" high x 4.27" deep (99x49x109 mm)

Panel Cutout: 3.622 x 1.68" (92x42.72 mm)

With Optional Adapters: 92 x 45 mm (3.622x1.77") for DIN or IEC cutout 99.57 x 42.72 mm (3.92" x 1.68") for other domestic cutout

Model 2850 120/240 V AC input; 0.55" planar gas discharge display, complete with panel mounting clips, edge connector and manual. **\$179.25 each**

Model 2851 5 V DC input, 0.55" planar gas discharge display, complete with panel mounting clips, edge connector and manual. **179.25 each**

Model 2852 120/240 V AC input, 0.43" LED display, complete with panel mounting clips, edge connector and manual. **179.25 each**

Model 2853 5 V DC input, 0.43" LED display, complete with panel mounting clips, edge connector and manual. **179.25 each**

STOCK RANGES

DC Voltage:				CATALOG NUMBERS			
Ranges	Maximum Indication	Input Resistance	Overload Protection	Model 2850	Model 2851	Model 2852	Model 2853
200 mV	±199.9 mV	≥100 MΩ	350 V All Ranges	22984	24101	24110	24119
2 V	±1.999 V	≥100 MΩ		22976	24102	24111	24120
20 V	±19.99 V	10 MΩ		22977	24103	24112	24121
200 V	±199.9 V	10 MΩ		22978	24104	24113	24122
DC Current:				CATALOG NUMBERS			
Ranges	Maximum Indication	Voltage Drop, FS	Maximum Input Current	Model 2850	Model 2851	Model 2852	Model 2853
20 uA	±19.99 uA	200 mV All Ranges	20 mA	22979	24105	24114	24123
200 uA	±199.9 uA		20 mA	22980	24106	24115	24124
2 mA	±1.999 mA		20 mA	22981	24107	24116	24125
20 mA	±19.99 mA		100 mA	22982	24108	24117	24126
200 mA	±199.9 mA		1 A	22983	24109	24118	24127

OPTIONAL MOUNTING HARDWARE FOR ALL MODELS

Adapter for IEC/DIN cutouts, Catalog No. 22992 . . . **\$4.50**

Adapter for domestic 3.92" x 1.68" cutout,

Catalog No. 22993 **4.50**

"U" Type Mounting Bracket, Catalog No. 22991 . . . **4.50**

Extra Edge Connector, Catalog No. 22990 **5.25**

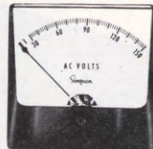
Simpson® Wide-Vue Panel Meters



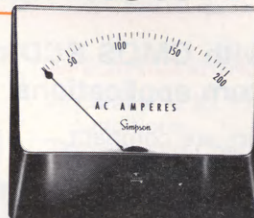
1 1/2" Models



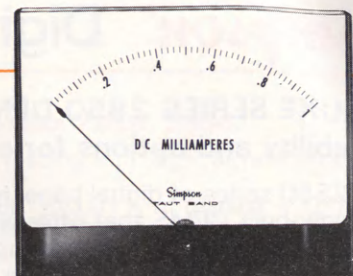
2 1/2" Models



3 1/2" Models



4 1/2" Models



8" Models

CALIBRATION—All DC Wide-Vue meters listed below have the Simpson self-shielded movement—calibration is not affected by stray magnetic fields or magnetic mounting.

AC meters have either iron-vane type or rectifier type movements. All calibrated at 60 Hz. Iron-vane type ammeters and milliammeters have frequency range (for $\pm 1\%$ deviation from value at 60 Hz) of 25 to 800 Hz. Iron-vane voltmeters have range of 25 to 125 Hz. Calibration to 800 Hz available on special order. All rectifier types have 25 Hz to 10 KHz range.

*External multipliers (Model 183) are furnished on 1 1/2" DC meters 500 volts or higher; on 2 1/2" DC meters 750 volts or higher; and on 3 1/2" and 4 1/2" DC meters 1000 volts or higher. All others have self-contained multipliers.

†1 1/2" DC ammeters are self-contained through 10 amps. 15 amps and higher are supplied as 50 mV meters to be used with external shunts. 2 1/2", 3 1/2" and 4 1/2" DC ammeters are self-contained through 50 amps. Higher range DC ammeters are 50 mV meters to be used with external shunts. Shunt listings are on page 21.

SPECIFICATIONS

Case Size	Type and Model Number					Accuracy	Scale Length	Pointer
	DC	AC Rectifier	AC Iron-Vane	RF	Watt			
1 1/2"	1212, 1212T	1214	—	—	—	DC; RF; AC Iron-Vane; Wattmeters* $\pm 2\%$	1.50" (38.1 mm)	Lance, Black
2 1/2"	1227, 1227T	1247	1257	—	—		2.30" (58.4 mm)	
3 1/2"	1327, 1327T	1347	1357	1337	—		3.14" (79.7 mm)	Spade, Black
4 1/2"	1329, 1329T	1349	1359	1339	1379		3.93" (100.00 mm)	
8"	728T	—	—	—	—	AC Rectifier Meters $\pm 3\%$	6.9" (174.2 mm)	

*Compensated Wattmeters $\pm 3\%$

STOCK RANGES

Range	Approx. Resistance (Ohms)	1 1/2" Case Style		2 1/2" Case Style		3 1/2" Case Style		4 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

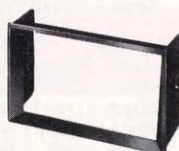
DC VOLTMETERS Self-shielding meter movement

		Model 1212		Model 1227		Model 1327		Model 1329	
0-5	1000 ohms per volt	09540	\$37.35	09550	\$39.90	09720	\$41.10	09870	\$44.70
0-8		—		—		09730		09880	
0-10		09541		09560		09740		09890	
0-15		09542		09570		09750		09900	
0-25		09543		09580		09760		09910	
0-30		09544		09590		09770		09920	
0-50		09545		09600		09780		09930	
0-100	2000 ohms per volt	09546	37.35	09610	41.10	09790	43.20	09940	46.50
0-150		09547		09620		09800		09950	
0-200		—		09622		09810		09960	
0-250		—		09623		09820		09970	
0-300		—		09630		09830		09980	
0-500		09548		—		—		—	
0-750	ohms per volt	09549*	46.20	09640	51.30	09840	52.65	09990	56.90
0-1000		—		09650*		09850		10000	
		—		09660*		09860*		10010*	

DC AMMETERS Self-shielding meter movement

0-1	.050	02431	37.35	02440	38.10	02640	39.90	02820	43.20
0-1.5	.033	—		02450		02650		02830	
0-2	.025	02432		02460		02660		02840	
0-3	.0166	02433		02470		02670		02850	
0-5	.010	02434		02480		02680		02860	
0-10	.005	02435		02490		02690		02870	
0-15	.0033	02436†	37.35	02500	38.10	02700	39.90	02880	43.20
0-25	.0020	02437†		02510		02710		02890	
0-30	.0017	—		02520		02720		02900	
0-50	.001	02438†		02530		02730		02910	
0-100	10.0	—		02540†		02740†		02920†	
0-150	10.0	—		02550†		02750†		02930†	
0-200	10.0	—	41.85	02552†	41.85	02760†	41.85	02940†	41.85
0-300	10.0	—		02554†		02770†		02950†	
0-500	10.0	—		—		02780†		02960†	
15-0-15	.0033	—		—		02790		—	
30-0-30	.0017	—		—		02800		—	
50-0-50	.001	—		—		02810		—	

WIDE-VUE MOUNTING BEZELS



Mounting bezels for that modern, streamlined appearance—made for Wide-Vue panel meters and interchangeable with flush and recess type meters of many popular styles. Designed for behind panel mounting on material thickness of 1/16" to 1/4".

Groove and flange style construction. Each bezel of die cast metal has an attractive black enamel satin finish and is supplied with mounting hardware and template.

Bezel mount kit consists of bezel, brackets and screws, and installation instructions. See dimensions on page 7.

WIDE-VUE BEZEL KITS

Meter Size	For Models	Cat. No.	Price
3 1/2"	1327, 1337 1347, 1357	01253	\$5.25
4 1/2"	1329, 1339, 1349, 1359, 1379	01123	5.25
Illumination Kit		01165	5.10

—Prices Are Suggested and Subject to Change Without Notice—

STOCK RANGES

Range	Approx. Resistance (ohms)†	1½" Case Style		2½" Case Style		3½" Case Style		4½" Case Style	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

DC MILLIVOLTMETERS Self-shielding movement

		Model 1212		Model 1227		Model 1327		Model 1329	
0-50	10.0	07005	\$37.35	07010	\$38.10	07020	\$39.90	07030	\$42.90
50-0-50	20.0	—	—	—	—	07021	39.90	07031	42.90

DC MILLIAMMETERS Self-shielding meter movement

0-1	43.0	06163	—	06175	—	06310	—	06470	—
0-3	2.0	—	—	06180	—	06320	—	06480	—
0-5	2.0 (20†)	06164	35.55	06190	37.65	06330	38.40	06490	41.10
0-10	10.0 (2.2†)	06165	—	06200	—	06340	—	06495	—
0-15	6.6 (2.2†)	06166	—	06210	—	06350	—	06502	—
0-20	5.0	—	—	06215	—	06360	—	06524	—
0-25	4.0 (6.0†)	06167	—	06220	—	06370	—	06530	—
0-50	2.0 (3.0†)	06168	—	06230	—	06380	—	06540	—
0-100	1.0 (1.5†)	06169	—	06240	—	06390	—	06550	—
0-150	.66 (1.0†)	06170	—	06250	—	06400	—	06560	—
0-200	.50 (.75†)	06171	37.35	06260	38.10	06410	39.90	06570	43.20
0-250	.40 (.60†)	06172	—	06270	—	06420	—	06580	—
0-300	.33 (.50†)	06173	—	06280	—	06430	—	06590	—
0-500	.20 (.30†)	06174	—	06290	—	06440	—	06600	—
0-750	.13	—	—	—	—	06450	—	06610	—
0-1000	.05	—	—	06292	—	06460	—	06620	—

DC MICROAMMETERS Self-shielding meter movement

0-50	1800 (5500†)	04294	46.50	04310	47.85	04380	48.75	04480	52.35
0-100	1800	04295	41.55	04320	43.20	04390	44.70	04490	49.65
0-200	1100	04296	37.95	04330	39.30	04400	41.10	04500	44.70
0-500	90 (190†)	04297	37.35	04340	38.40	04410	40.35	04510	43.95
25-0-25	1800 (5500†)	04298	46.95	—	—	04420	49.20	04520	52.65
50-0-50	1800	04302	41.85	04350	43.95	04430	44.70	04530	49.95
100-0-100	1100	04300	38.10	04351	39.90	04440	41.55	04540	45.30
500-0-500	43	04301	36.15	04352	37.95	04450	39.30	04550	41.55

† Resistances of Model 1212 shown in ()

Range	Approx. Resistance (ohms)	1½" Case Style		2½" Case Style		3½" Case Style		4½" Case Style		8" Case Style	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

TAUT-BAND DC MILLIAMMETER Self-shielding meter movement

		Model 1212T	Model 1227T	Model 1327T	Model 1329T	Model 728T
0-1	10.0	—	—	—	—	11210 \$69.95

TAUT-BAND DC MICROAMMETERS Self-shielding meter movement

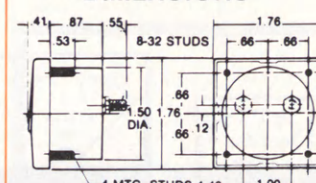
0-5	5750	—	—	04358	\$90.00	04458	\$95.85	—	—
0-10	4900	—	—	04303	\$75.75	04359	\$79.20	04459	\$85.65
0-15	1960 (5000†)	04601	\$69.45	04304	\$69.45	04361	\$70.80	04461	\$76.95
0-25	1960 (5780†)	04602	\$64.35	04306	\$65.85	04371	\$69.00	04471	\$74.70
0-50	960 (1600†)	04603	\$51.00	04311	\$51.60	04381	\$52.65	04481	\$57.00
0-100	500	04604	\$45.30	04321	\$47.25	04391	\$48.75	04491	\$53.85
0-200	234	04605	\$42.15	04331	\$44.25	04401	\$46.20	04501	\$51.00

† Resistances of Model 1212T shown in ()

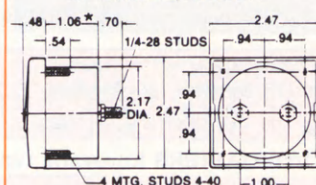
† Resistances of Model 728T shown in ()

MORE WIDE-VUE LISTINGS ON FOLLOWING PAGE

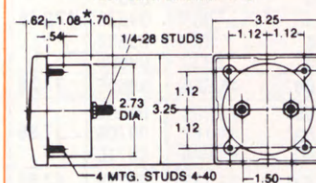
WIDE-VUE DIMENSIONS



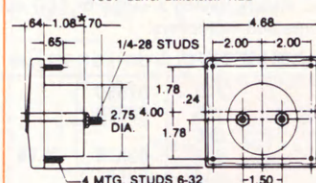
1" Models 1212, 1212T, 1214



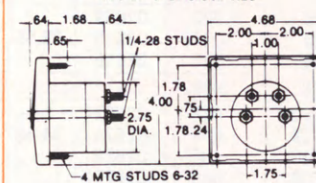
2" Models 1227, 1227T, 1237, 1247, 1257
* 1257 Barrel Dimension 1.15



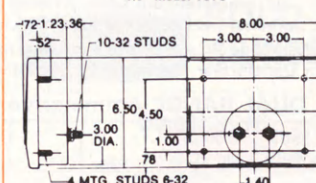
3" Models 1327, 1327T, 1337, 1347, 1357
* 1357 Barrel Dimension 1.22



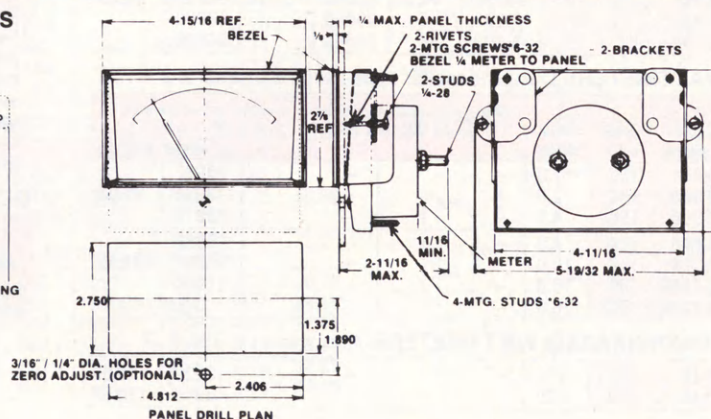
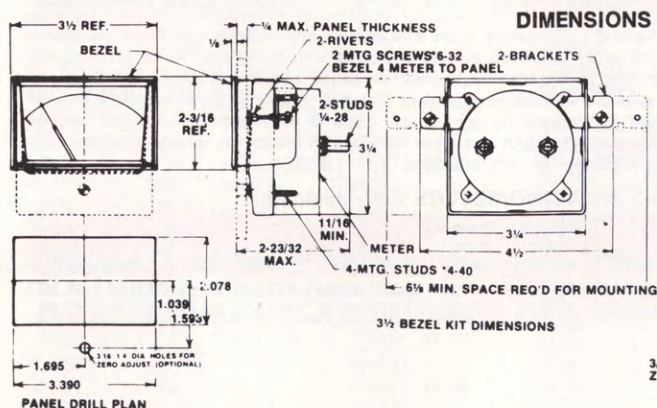
4" Models 1329, 1329T, 1339, 1349, 1359
* 1359 Barrel Dimension 1.20



4" Model 1379



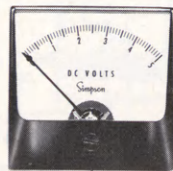
8" Model 728T



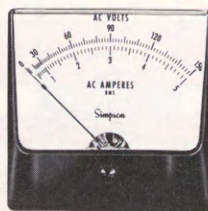
Simpson® Wide-Vue Panel Meters (continued)



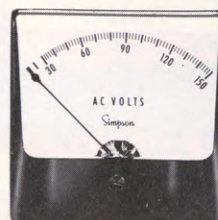
1 1/2" Models



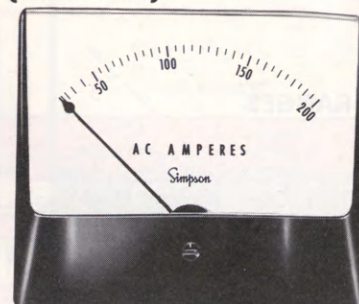
2 1/2" Models



3 1/2" Dual Range



3 1/2" Models



4 1/2" Models

Range	Approx. Impedance (ohms) @ 60 Hz.	2 1/2" Case Style		3 1/2" Case Style		4 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

AC VOLTMETERS Iron-vane type movement

		Model 1257		Model 1357		Model 1359	
0-5	33	—	—	10160	—	10260	—
0-10	133	09670	—	10170	—	10270	—
0-15	300	09675	\$36.15	10180	\$37.95	10280	\$42.15
0-25	833	09680	—	10190	—	10290	—
0-50	3,333	09690	—	10200	—	10300	—
0-100	16,666	09695	37.35	10210	39.30	10310	—
0-150	25,000	09700	—	10220	—	10320	—
0-250	41,166	09705	37.95	10230	40.35	10330	43.20
0-300	50,000	09710	—	10240	—	10340	—
0-500††	83,333	09715	47.85	10250	51.15	10350	54.45

††External multipliers, Model 183, (featured on page 21) are furnished on AC meters having a range of 500 volts or higher. All others have self-contained multipliers.

AC AMMETERS Iron-vane type movement

0-1	.213	02560	—	03130	—	03260	—
0-1.5	.105	02570	—	03140	—	03270	—
0-2	.065	—	—	03150	—	03280	—
0-3	.028	02575	34.50	03160	36.15	03290	38.25
0-5	.008	02580	—	03170	—	03300	—
0-10	.004	02590	—	03180	—	03310	—
0-15	.0025	02599	—	03190	—	03320	—
0-25	.002	02609	—	03200	—	03330	—
0-30	.0015	02615	35.55	03205	37.65	03335	39.90
0-50	.001	02619	—	03210	—	03340	—
0-75	.0002	—	—	03215	40.35	03345	43.20
0-100	.008	02622†	—	03220†	—	03350†	—
0-150	.008	02624†	34.50	03230†	36.15	03360†	38.25
0-200	.008	02626†	—	03240†	—	03370†	—
0-300	.008	02627†	—	03250†	—	03380†	—

† 2 1/2" AC ammeters are self-contained through 50 amps. 3 1/2" and 4 1/2" AC ammeters are self-contained through 75 amps.

Higher range AC ammeters are 5 amp meters to be used with external current transformer. See page 21 for listing of current transformers.

AC DUAL RANGE Ammeter/voltmeter models

0-150V and 0-5A	15030 and .021	—	—	03129	51.30	03259	54.60
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AC MILLIAMMETERS Iron-vane type movement

0-10	1,650	06294	—	06625	—	06665	—
0-50	80	06295	—	06630	—	06670	—
0-100	17.2	06296	34.50	06640	36.15	06680	38.25
0-250	3.15	06297	—	06650	—	06690	—
0-500	0.9	06300	—	06660	—	06699	—

WATTMETERS Dynamometer type, single phase ± 2% F.S.

Wattmeters calibrated for either magnetic or non-magnetic panels and for a frequency range of 25-125 Hz.						
Range Watts	Range Volts	Max. Amps	Model 1379			
0-75	150	1.0	—	—	10960	—
0-150	150	2.0	—	—	10970	97.80
0-300	150	4.0	—	—	10975	—
0-600	300	4.0	—	—	10980	—
0-750	150	10.0	—	—	10990	103.95
0-1500	300	10.0	—	—	11000	—
0-3000	300	20.0	—	—	11010	—

COMPENSATED WATTMETERS Accuracy ± 3% F.S.

0-10	300	.175	—	—	10930	130.80
0-20	300	.400	—	—	10940	130.80

Wide-Vue Panel Meters in 1 1/2", 2 1/2", 3 1/2", 4 1/2" Sizes

STOCK RANGES

Range	Approx. Resistance (ohms)	1 1/2" Case Styles		2 1/2" Case Styles		3 1/2" Case Styles		4 1/2" Case Styles	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

RF AMMETERS Self-shielding

		Model 1337		Model 1339	
0-1	.343	—	—	02970	03050
0-1.5	.200	—	—	02980	03060
0-2	.120	—	—	02990	03070
0-2.5	.10	—	—	03000	03080
0-3	.08	—	—	03010	\$45.30 03090
0-5	.045	—	—	03020	03100
0-8	.031	—	—	03030	03110
0-10	.023	—	—	03040	03120

RF MILLIAMMETERS Self-shielding

0-500	.63	—	—	05362	53.70	05364	60.15
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AC VOLTMETERS RECTIFIER TYPE Self-shielding

		Model 1214		Model 1247		Model 1347		Model 1349	
0-5	2000 ohms per volt	10011	—	10015	—	10020	—	10090	—
0-10		10012	—	10016	—	10030	—	10100	—
0-15		—	\$51.00	—	\$47.25	10040	53.85	10110	59.55
0-50		—	—	—	—	10050	—	10120	—
0-150		10013	—	10017	—	10060	—	10130	—
0-300	—	10014	—	10018	—	10070	—	10140	—

DECIBEL METERS Zero power level: 6mW into 500Ω line. Self-shielding

-10 to +6 dB	5000	—	03483	52.35	03485	55.80	03487	57.45
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VU (Volume Level) METERS† Reference level: 1mW into 600Ω line. Self-shielding

Scale	Model 1214		Model 1247		Model 1347		Model 1349	
A-Scale	10472	56.40	10474	62.40	10480	63.45	10490	69.45
B-Scale	—	—	—	—	10550	63.45	10560	69.45

† Simpson VU meters meet all electrical and ballistic specifications established by Bell Laboratories and American Standards Association as required by broadcasting, communication and sound engineers. They are available with either type A or B scales. Type A scale stresses the level in VU for monitoring wire lines. Type B scale stresses percent use of transmitter output and is the standard for broadcast service. Impedance is 3900Ω @ "0" VU deflection.

DC GALVANOMETERS Self-shielding

Range	Sensitivity (micro-amperes)	Resistance (ohms)	Model 1227		Model 1327		Model 1329	
50-0-50	500-0-500	43	03700	37.65	03730	37.65	03732	41.55
50-0-50	75-0-75	1800	03710	40.35	03720	43.95	03734	47.85

Simpson® Designer and Bold-Vue Panel Meters

SPECIFICATIONS	Model 523	Model 543	Model 553	Model 524	Model 544	Model 554
Case Size	3 1/2"	3 1/2"	3 1/2"	4 1/2"	4 1/2"	4 1/2"
Scale Length	2.92" (74.2 mm)	2.69" (68.3mm)	3.25" (82.5mm)	2.84" (72.1 mm)		

All Models: $\pm 2\%$ accuracy, knife edge pointer, black phenolic case with glass window

STOCK RANGES

Range	Approx. Resist. (ohms)	3 1/2" Case Style		4 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price

DC VOLTMETERS Self-shielding

		Model 523	Model 524
0-5	1000 ohms per volt	15038	15108
0-10		15039	15109
0-15		15040	15110
0-30		15042	15112
0-50		15044	15114
0-100		15045	15111
0-150		15046	15116

DC AMMETERS Self-shielding

0-1	.050	15031		15101	
0-3	.0166	15032		15102	
0-5	.010	15033		15103	
0-10	.005	15030	39.90	15100	43.20
0-15	.0033	15034		15104	
0-25	.0020	15035		15105	
0-50	.001	15036		15106	

DC MILLIAMMETERS Self-shielding

0-1	43.0	15000		15070	
0-5	2.0	15001	38.40	15076	41.10
0-10	10.0	15002		15077	
0-50	2.0	15003		15078	
0-100	1.0	15010		15080	
0-200	0.5	15004	39.90	15079	43.20
0-300	0.33	15012		15081	
0-500	0.2	15013		15082	

VU METERS Self-shielding

Scale	Model 543	Model 544
A-Scale	15064	63.45
A-Scale, Illumin.	15065	69.90
B-Scale, Illumin.	15066	69.90

* 2 lamps, 28V, 40 mA each

STOCK RANGES

Range	Approx. Resist. (ohms)	3 1/2" Case Style		4 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price

DC MICROAMMETERS Self-shielding

		Model 523	Model 524
0-15	1960	15014	\$70.20
0-25	2100	15015	\$60.15
0-50	1800	15017	\$48.75
0-100	1800	15019	\$44.70
0-200	1100	15021	\$41.10
0-500	90	15022	\$40.35
25-0-25	1800	15023	\$49.20
50-0-50	1800	15025	\$44.70
100-0-100	1100	15027	\$41.55
500-0-500	43	15024	\$39.30

DC MILLIVOLTMETERS Self-shielding

0-50	10.0	15048	39.30	15118	43.20
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AC VOLTMETERS Iron-vane type

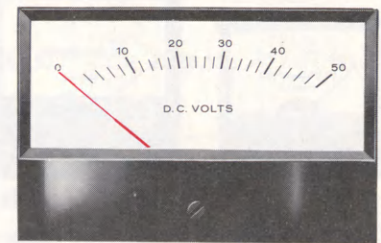
		Model 553	Model 554
0-150	25,000	15060	15130
0-250	41,166	15061	40.35
0-300	50,000	15062	15131

AC AMMETERS Iron-vane type

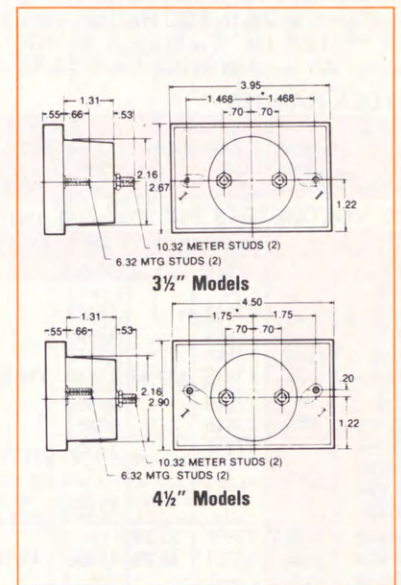
0-1	.213	15049		15121	
0-5	.008	15050		15120	41.85
0-10	.004	15052		15122	
0-15	.0025	15051	36.15	15123	
0-25	.002	15053		15125	43.20
0-50	.001	15054		15124	43.20
0-100	.008	15056		15127	41.85
0-150	.008	15057		15128	41.85

†Requires external current transformer(see page 21)

DESIGNER® SERIES



Clean, uncluttered look.
Maximum readability in minimum height.



SPECIFICATIONS: Scale length for 2 1/2" models 2.207" (56.1 mm); for 3 1/2" models, 3.047" (77.4 mm). All models: $\pm 2\%$ F.S. accuracy; wide tapered red lance pointer.

STOCK RANGES

Range	Approx. Resist. (ohms)	2 1/2" Case Style		3 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price

DC VOLTMETERS Self-shielding

		Model 1222	Model 1223
0-5	1000 ohms per volt	15465	15575
0-10		15466	15577
0-15		15467	15578
0-25		15470	—
0-30		15475	15581
0-50		15480	15583
0-100		15490	15585
0-150		15495	15587
0-300		15500	15590

DC AMMETERS Self-shielding

0-1	.050	15401		15510	
0-2	.025	—		15515	
0-5	.010	15405	38.10	15520	39.90
0-10	.005	15410		15522	
0-15	.0033	15411		15525	
0-25	.0020	15415	38.10	15530	39.90
0-50	.001	15417	38.10	15535	39.90

DC MILLIAMMETERS Self-shielding

0-1	43.0	15420	37.65	15540	38.40
0-50	2.0	15428	38.10	15550	38.40
0-100	1.0	—		15552	
0-200	0.5	—		15555	39.90
0-300	0.33	—		15557	
0-500	0.2	15445	38.10	15558	

STOCK RANGES

Range	Approx. Resist. (ohms)	2 1/2" Case Style		3 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price

DC MILLIVOLTMETER Self-shielding

		Model 1222	Model 1223
0-50	10.0	15505	\$38.10
		15593	\$39.90

DC MICROAMMETERS Self-shielding

0-50	1800	15450	47.85	15560	48.75
0-100	1800	15452	43.20	15562	44.70
0-200	1100	15455	39.30	15563	41.10
25-0-25	1800	—		15570	49.20
50-0-50	1800	15461	43.95	15571	44.70
100-0-100	1100	—		15572	41.55
500-0-500	43	—		15573	39.30

AC VOLTMETERS Iron-vane type

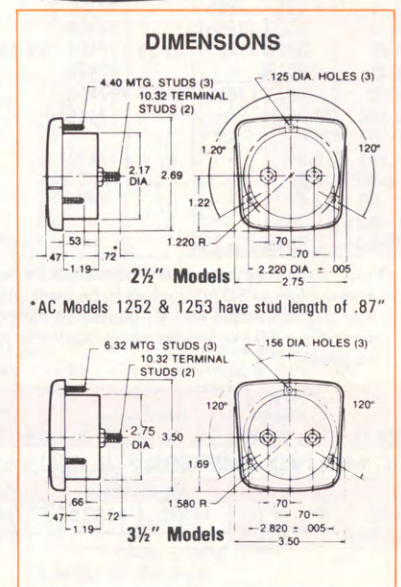
		Model 1252	Model 1253
0-150	25,000	15620	15660
0-250	41,166	15625	37.95
0-300	50,000	15630	15670

AC AMMETERS Iron-vane type

0-3	.028	15597	34.50	15636	36.15
0-5	.008	15598	34.50	15637	36.15
0-10	.004	15600	34.50	15640	36.15
0-15	.0025	15605	34.50	15642	36.15
0-25	.002	15610	35.55	15645	37.65
0-50	.001	15613	35.55	15648	37.65



BOLD-VUE® SERIES



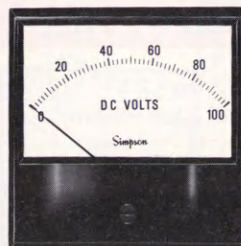
Simpson® Century Panel Meters



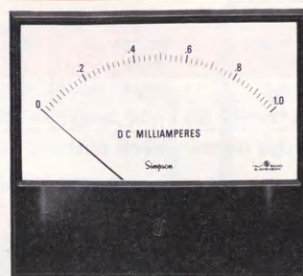
1 1/2" Models



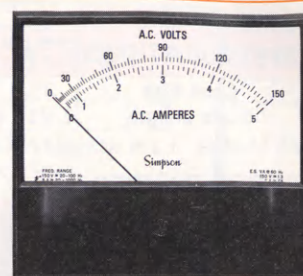
2 1/2" Models



3 1/2" Models



4 1/2" Models



4 1/2" Dual Range

CALIBRATION—All Century DC meters listed below have the Simpson self-shielded movement. (Calibration is not affected by stray magnetic field or magnetic mounting.) AC meters have either iron-vane type or rectifier type movements. All calibrated at 60 Hz. Iron-vane type ammeters and milliammeters have frequency range (for $\pm 1\%$ deviation from value at 60 Hz) of 25 to 800 Hz. Iron-vane voltmeters have range of 25 to 125 Hz. Calibration to 800 Hz available on special order. All rectifier types have 25 Hz to 10 KHz range.

STOCK RANGES

Range	Approx. Resist. (ohms)	1 1/2" Case Style Cat. No. Price	2 1/2" Case Style Cat. No. Price	3 1/2" Case Style Cat. No. Price	4 1/2" Case Style Cat. No. Price
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DC VOLTMETERS Self-shielding meter movement

		Model 2121	Model 2122	Model 2123	Model 2124
0-5		17840	17445	17525	17618
0-8		—	—	—	17619
0-10		17842	17446	17527	17620
0-15		17843	17447	17528	17621
0-25		17844	17448	17529	17622
0-30	1000 ohms per volt	17845	\$37.35 17449	\$39.90 17530	\$41.10 17623
0-50		17846	17450	17531	17624
0-100		17848	17451	17532	17625
0-150		17849	17452	17533	17626
0-200		—	—	17534	17627
0-250		—	—	17535	—
0-300		—	17455	17536	17629
0-300	2000 ohms per volt	17850	37.35	—	—
0-500		17851*	46.20 17456	41.10 17537	43.20 17630
0-750		—	—	17538	43.20 17631
0-1000		—	17458* 51.30	17539* 52.65	17632* 56.40

*External multipliers (Model 183) are furnished on 1 1/2" DC meters 500 volts or higher; on 2 1/2" DC meters, 750 volts or higher; and on 3 1/2" and 4 1/2" DC meters, 1000 volts or higher. All others have self-contained multipliers.

DC AMMETERS Self-shielding meter movement

0-1	.050	17800	17400	17475	17565
0-1.5	.003	—	17401	17476	—
0-2	.025	17801	17402	17477	17567
0-3	.0166	17802	17403	17478	17568
0-5	.010	17803	17404	17479	17569
0-10	.005	17805	17405	17480	17570
0-15	.0033	17806†	17406	17481	17571
0-25	.0020	17807†	17407	17482	17572
0-30	.0017	—	17408	17483	17573
0-50	.001	17808†	17409	17484	17574
0-100	10.0	—	17410†	17485†	17575†
0-150	10.0	—	—	17486†	17576†
0-200	10.0	—	17412†	17487†	17577†
0-300	10.0	—	—	17488†	17578†
0-500	10.0	—	—	17489†	17579†
15-0-15	.0033	—	—	17490	41.85
30-0-30	.0017	—	—	17491	41.85

†1 1/2" DC ammeters are self-contained through 10 amps. 15 amps and higher are supplied as 50 mV meters to be used with external shunts. 2 1/2", 3 1/2" and 4 1/2" DC ammeters are self-contained through 50 amps. Higher range DC ammeters are 50 mV meters to be used with external shunts. See shunt listings on page 21.

Range	Approx. Resist. (ohms)	2 1/2" Case Style Cat. No. Price	3 1/2" Case Style Cat. No. Price	4 1/2" Case Style Cat. No. Price
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DC MILLIVOLTMETERS Self-shielding meter movement

		Model 2122	Model 2123	Model 2124
0-50	10.0	17472	\$38.10 17540	\$39.90 17636
50-0-50	20.0	—	17541	39.90 17635

SPECIFICATIONS

Size	DC	Type and Model Number					Accuracy (% of Full Scale)	Scale Length	Pointer	
		AC Iron- Vane	RF	Watt	AC Recti- fier	DB				VU
1½"	2121	—	—	—	2141	—	2141	DC, RF AC Iron- Vane and Wattmeters, ± 2% Compensated Wattmeters and AC Rectifier Meters ± 3%	1.25" (31.7mm)	Knife Edge Black
	2122	—	2132	—	2142	2142	2142		2.07" (52.6mm)	
2½"	—	2152	—	—	—	—	—		1.86" (47.3mm)	
	2123	—	2133	—	2143	2143	2143		2.75" (69.8mm)	
3½"	—	2153	—	2173	—	—	—	2.48" (63mm)		
	2124	—	2134	—	2144	2144	2144	4.09" (103.9mm)*		
4½"	—	2154	—	2173	—	—	—	2.71" (94.2mm)		

*VU meter, 3.71 (94.2mm)

Range	Approx. Resist. (ohms)	1 1/2" Case Style Cat. No. Price	2 1/2" Case Style Cat. No. Price	3 1/2" Case Style Cat. No. Price	4 1/2" Case Style Cat. No. Price
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DC MILLIAMMETERS Self-shielding meter movement

		Model 2121	Model 2122	Model 2123	Model 2124
0-1	43.0	17825	17430	17510	17600
0-3	2.0	—	17431	17511	17601
0-5	2.0(20+)	17826	\$35.55 17432	\$37.65 17512	\$38.40 17602
0-10	10.0(2.2+)	17827	17433	17513	17603
0-15	6.6(2.2+)	17828	17434	—	—
0-20	5.0	—	—	17515	—
0-25	4.0(6.0+)	17829	17436	17516	17606
0-50	2.0(3.0+)	17830	17437	17517	17607
0-100	1.0(1.5+)	17832	17438	17518	17608
0-150	.66(1.0+)	17833	17439	17519	17609
0-200	.50(75+)	17834	37.35 17440	38.10 17520	39.90 17610
0-250	.40(60+)	17835	17441	17521	17611
0-300	.33(50+)	17836	17442	17522	17612
0-500	.20(30+)	17837	17443	17523	17613
0-750	.13	—	—	17524	17614
0-1000	.05	—	17444	—	17615

DC MICROAMMETERS Self-shielding meter movement

0-50	1800(5500+)	17815	46.50 17418	47.85 17499	48.75 17589	52.35
0-100	1800	17816	41.55 17420	43.20 17501	44.70 17591	49.65
0-200	1100	17818	37.95 17422	39.30 17503	41.10 17593	44.70
0-500	90(190+)	17819	37.35 17424	38.40 17505	41.10 17595	43.95
25-0-25	1800(5500+)	17820	46.95	—	17506	49.20
50-0-50	1800	17821	41.85 17425	43.95 17507	44.70 17597	49.95
100-0-100	1100	17822	38.10 17426	39.90 17508	41.55 17598	45.30
500-0-500	43	17823	36.15 17427	37.95 17509	39.30 17599	41.55

†Resistances of Model 2121

Range	Approx. Resist. (ohms)	2 1/2" Case Style Cat. No. Price	3 1/2" Case Style Cat. No. Price	4 1/2" Case Style Cat. No. Price
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TAUT-BAND DC MICROAMMETERS Self-shielding

		Model 2122T	Model 2123T	Model 2124T
0-5	5750	—	17495††	\$90.00 17585††
0-10	4900	17415	17496	79.20 17586
0-15	1960	17416	68.45 17497	70.80 17587
0-25	1960	17417	65.85 17498	69.00 17588
0-50	960	17419	51.60 17500	52.65 17590
0-100	500	17421	47.25 17502	48.75 17592
0-200	234	17423	44.25	—

††High flux annular taut-band movement

—Prices Are Suggested and Subject to Change Without Notice—

Range	Approx. Impedance (ohms) @ 60 Hz.	1 1/2" Case Style		2 1/2" Case Style		3 1/2" Case Style		4 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

AC VOLTMETERS Rectifier type. Self-shielding meter movement

		Model 2141	Model 2142	Model 2143	Model 2144
0-5		17855	17460	17542	17640
0-10	2000	17856	—	17543	17641
0-15	ohms		\$51.00	\$47.25	17544
0-50	per	—	—	17545	17642
0-150	volt	17860	17462	17546	17643
0-300	volt	17861	—	—	17644
					17645

AC VOLTMETERS Iron-vane type

		Model 2152	Model 2153	Model 2154
0-5	33	—	17725	—
0-10	133	—	17726	17771
0-15	300	—	17686	36.15
0-25	833	—	17687	17727
0-50	3,333	—	17688	17728
0-100	16,666	—	—	17729
0-150	25,000	—	17690	17730
0-250	41,166	—	17691	17731
0-300	50,000	—	17692	17732
0-500††	83,333	—	—	17733
				17734

RF AMMETERS Self-shielding meter movement

		Model 2132	Model 2133	Model 2134
0-1	.343	—	17905	—
0-2	.120	—	17906	17650
0-3	.08	—	17907	17652
0-5	.045	—	17908	41.55
0-10	.023	—	17909	17555
				17557

DECIBEL METERS Zero power level: 6mW into 500Ω line

Self-shielding meter movement

		Model 2142	Model 2143	Model 2144
-10 to +6 dB	5000	—	17465	52.35
			17549	55.80
			17648	57.45

VU (Volume Level) METERS† Reference level: 1mW into 600Ω

Self-shielding meter movement

Scale	Model 2141	Model 2142	Model 2143	Model 2144
A-Scale	17865	56.40	17473	62.40
B-Scale	—	—	17560	63.45
A-Scale, Illum.*	—	—	17561	63.45
B-Scale, Illum.*	—	—	—	17647
				69.45
				17662
				75.30
				17663
				75.30

* 12 V, 120 mA lamps

Range	Sensitivity (μA)	Approx. Resistance (ohms)	Model 2122-2 1/2" Case Style Cat. No. Price	Model 2123-3 1/2" Case Style Cat. No. Price
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DC GALVANOMETERS Self-shielding

50-0-50	500-0-500	43	17470	\$37.65	17558	\$39.30
50-0-50	75-0-75	1800	—	—	17559	43.95

† Simpson VU meters meet all the electrical and ballistic specifications established by Bell Laboratories and American National Standards Institute as required by broadcasting, communication and sound engineers. They are available with either type A or B scales. Type A scale stresses the level in VU for monitoring wire lines. Type B scale stresses percent use of transmitter output and is the standard for broadcast service. Impedance is 3900 ohms at "0" VU deflection.

Range	Approx. Impedance (ohms) @ 60 Hz.	2 1/2" Case Style		3 1/2" Case Style		4 1/2" Case Style	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

AC AMMETERS Iron-vane type movement

		Model 2152	Model 2153	Model 2154
0-1	.213	17665	17695	17740
0-1.5	.105	17666	—	—
0-2	.065	—	17697	17742
0-3	.028	17667	17698	17743
0-5	.008	17668	17699	17744
0-10	.004	17669	17700	17745
0-15	.0025	17670	17701	17746
0-25	.002	17671	17702	17747
0-30	.0015	17672	17703	17748
0-50	.001	17673	17704	17749
0-75	.0002	—	17710	17755
0-100	.008	17674†	17706†	17751†
0-150	.008	—	17707†	17752†
0-200	.008	—	17708†	17753†
0-300	.008	—	17709†	17754†

AC DUAL RANGE Ammeter/voltmeter models

0-150V and 0-5A	15030 and .021	—	17694	51.30	17739	54.60
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AC MILLIAMMETERS Iron-vane type movement

0-10	1,650	17680	—	17760
0-50	80	17681	17716	17761
0-100	17.2	17682	17717	17762
0-250	3.15	17683	17718	17763
0-500	.9	17684	17719	17764

WATTMETERS Dynamometer type. Single-phase

accuracy ± 2% F.S.

Range	Volts	Amps	Model 2173	Model 2174
0-75	150	1.0	17881	17896
0-150	150	2.0	17882	17897
0-300	150	4.0	17883	17898
0-600	300	4.0	17884	17899
0-750	150	10.0	17885	17900
0-1500	300	10.0	17886	17901
0-3000	300	20.0	17887	17902

COMPENSATED WATTMETERS Accuracy ± 3% F.S.

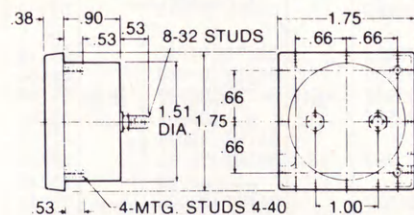
The standard wattmeter is unsuitable for use at low values of power because the power dissipated in the meter itself becomes an appreciable portion of the meter reading. This error is corrected in a COMPENSATED wattmeter.

0-10	300	0.175	—	17875	17890
0-20	300	0.400	—	17876	17891
0-20	500	0.175	—	17878	17893
0-30	300	0.650	—	17877	17892
0-30	500	0.300	—	17879	17894
0-50	500	0.500	—	17880	17895

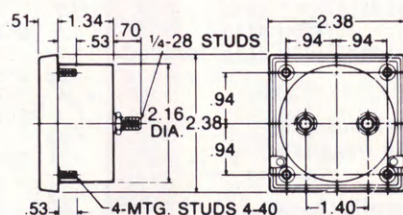
†† External multipliers, Model 183, (on page 21) are furnished on AC meters having a range of 500 volts or higher. All others have self-contained multipliers.

‡ 2 1/2" AC ammeters are self-contained through 50 amps. 3 1/2" and 4 1/2" AC ammeters are self-contained through 75 amps. Higher range AC ammeters are 5 amp meters to be used with external current transformer. See page 21 for current transformer listings.

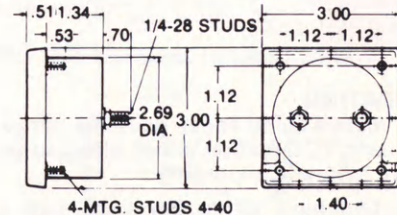
CENTURY SERIES DIMENSIONS



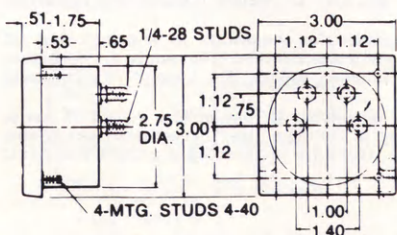
Model 2121, 2141



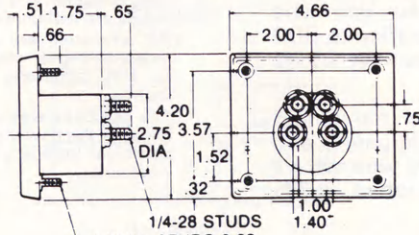
Model 2122, 2132, 2142, 2152



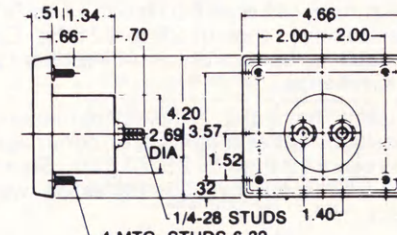
Models 2123, 2133, 2143, 2153



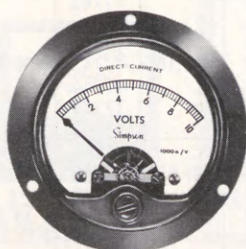
Model 2173



Model 2174

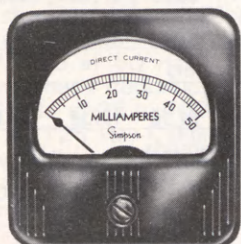


Models 2124, 2134, 2144, 2154



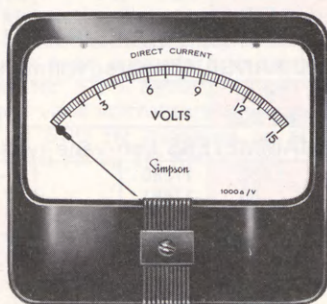
2 1/2" Models 125, 127T, 135, 145, 155, 175

3" Models 25, 25T, 35, 45, 55, 75



2 1/2" Models 127, 127T, 137, 147, 157, 177

3 1/2" Models 27, 27T, 37, 47, 57, 77



4 1/2" Models 29, 29T, 39, 49, 59, 79

2 1/2", 3 1/2", 4 1/2" SPECIFICATIONS

Type and Model Number								Accuracy (% of full scale)	Scale Length	Pointer
Size	DC	Iron-Vane	RF	Watt	AC Rectifier	dB	VU			
2 1/2"	125, 125T	—	135, 137	—	—	145, 147	—	Compensated Wattmeters ± 3% VU meters Per ASA, see footnote† page 11	1.8" (45.7 mm)	Spade, Black
	127, 127T	—	—	—	—	—	—		1.6" (41.1 mm)	
3 1/2"	25, 25T	—	35, 37	—	45, 47	45, 57	45, 47		2.5" (63.7 mm)	
	27, 27T	—	—	—	—	—	—		2.3" (57.4 mm)	
4 1/2"	29, 29T	—	39	—	49	49	142		3.8" (97 mm)	
	—	59	—	79	—	—	—		3.5" (89.0 mm)	

Approx. Resistance Range (ohms)	2 1/2" Case Styles		3 1/2" Case Styles		4 1/2" Case Styles	
	Cat. Nos.	Price	Cat. Nos.	Price	Cat. Nos.	Price
	Models 125, 127		Models 25, 27		Model 29	

DC AMMETERS Self-shielding meter movement

0-1	.050	01460	01680		00005	00230		00450	
0-1.5	.033	—	01690		—	00240		00460	
0-2	.025	—	01709		00030	00250		00470	
0-3	.0166	01490	01710		00040	00260		00480	
0-5	.010	01500	01720		00050	00270		00490	
0-10	.005	01510	01730		00060	00280		00500	
0-15	.0033	01520	01740		00070	00290		00512	
0-25	.0020	01530	01750		00080	00300		00520	
0-30	.0017	01540	01760	\$38.10	00090	00310	\$39.90	00530	\$43.20
0-50	.001	01550	01770		00099	00320		00540	
0-75	10.0	01560	01780†		00110†	00330†		00550†	
0-100	10.0	01570†	01790†		00120†	00340†		00560†	
0-150	10.0	01580†	01800†		00130†	00350†		00570†	
0-200	10.0	01590†	01810†		00140†	00360†		00580†	
0-250	10.0	—	—		00151†	—		00590†	
0-300	10.0	01610†	—		00160†	00380†		00600†	
0-500	10.0	01620†	—		00170†	00390†		00610†	
0-750	10.0	—	—		00177†	00400†		00620†	
0-1000	10.0	—	—		00188†	00410†		00630†	
15-0.15	.0033	—	—		00200	—		00640	
30-0.30	.0017	01660	01880	38.40	00210	00430	41.85	00650	44.10
50-0.50	.001	01670	01890		00220	00440		00660	

DC MILLIVOLTMETERS Self-shielding meter movement

0-50	10	06970	06990	38.10	06910	06930	39.90	06950	43.20
0-100	20	—	—		—	06940	39.90	06960	43.20

DC MILLIAMMETERS Self-shielding meter movement

0-1	43.0	05580	05760		04610	04790		05070	
0-1.5	43.0	—	05780		04620	04810		05080	
0-3	2.0	—	05790		—	04820		05090	
0-5	2.0	05610	05800	37.65	04640	04830	38.40	05100	41.10
0-10	10.0	05620	05810		04650	04840		05110	
0-15	6.6	05630	05830		04660	04860		05120	
0-20	5.0	—	—		—	04880		05130	
0-25	4.0	05650	05860		04680	04890		05140	
0-50	2.0	—	05880		04690	04910		05150	
0-75	1.3	05670	—		—	—		—	
0-100	1.0	05680	05910		04710	04940		05170	
0-150	.66	05690	05930		04720	04960		05180	
0-200	.5	05700	05940	38.10	04730	04980	39.90	05190	43.20
0-250	.4	05710	05960		—	05000		05200	
0-300	.33	—	—		04750	05010		05210	
0-500	.2	05730	05990		04760	05030		05220	
0-750	.13	—	—		—	05050		05230	
0-1000	.05	—	06020		04780	05060		05240	

†External multipliers, Model 183, are furnished on 2 1/2" DC meters 750 volts or higher; and on 3 1/2" and 4 1/2" DC meters 1000 volts or higher. All others are self-contained.

‡DC ammeters are self-contained for ranges up to and including 50 amperes. Higher range DC ammeters (50 mV) listed above are calibrated for 5 ft. leads and require external shunts. See page 21 for complete listings.

*The standard wattmeter is unsuitable for use at low values of power because the power dissipated in the meter itself becomes an appreciable portion of the meter reading. This error is corrected in a COMPENSATED wattmeter.

Range	Approx. Resistance (ohms)	2 1/2" Case Styles		3 1/2" Case Styles		4 1/2" Case Styles	
		Cat. Nos.	Price	Cat. Nos.	Price	Cat. Nos.	Price

DC VOLTMETERS Self-shielding meter movement

		Models 125, 127		Models 25, 27		Model 29	
0-1.5		08850	09020	—	07290	07620	
0-3		—	09030	07070	07300	07630	
0-5		08870	09040	07080	07310	07640	
0-8		—	09050	—	—	07650	
0-10		08890	09060	07100	07330	07660	
0-15		08900	09080	07110	07350	07670	
0-25		08910	09090	07120	07360	07680	\$44.70
0-30		08920	09100	07130	07370	07690	
0-50		08930	09110	07140	07380	07700	
0-100		08940	09130	07150	07400	07710	
0-150		08950	09140	07160	07410	07720	
0-200		08960	09160	07170	07430	07730	
0-250		08970	09170	07180	07440	07740	
0-300		—	09180	07190	07450	07750	
0-500		—	09200	07200	07470	07760	46.50
0-750		—	—	07210	07490	07770	46.50
0-1000		—	—	07220	07495†	07780†	56.40
0-1500		—	—	07230†	07520†	07790†	57.15
0-2000		—	09225†	07240	07530†	07800†	58.20
0-2500		—	—	—	07550†	07810†	59.25
0-3000		—	—	07260†	07560†	07820†	59.70
0-4000		—	—	—	—	07830†	60.15
0-5000		—	—	07280†	07600†	07840†	63.15

CALIBRATION

All DC meters listed above have the Simpson self-shielding movement. (Calibration is not affected by stray magnetic fields or magnetic mounting.)

AC meters have either iron-vane type or rectifier type movements. All calibrated at 60 Hz. Iron-vane type ammeters and milliammeters have frequency range (for ± 1% deviation from value at 60 Hz) of 25 to 800 Hz. Iron-vane voltmeters have range of 25 to 125 Hz. Calibration to 800 Hz available on special order. All rectifier types have 25 Hz to 10 KHz range.

Wattmeters have the Simpson dynamometer movement calibrated for either magnetic or non-magnetic panels and for a frequency range of 25-125 Hz. Standard wattmeters have ± 2% accuracy, compensated wattmeters ± 3% accuracy.*

—Prices Are Suggested and Subject to Change Without Notice—

Range	Approx. Resistance (ohms)	2 1/2" Case Styles		3 1/2" Case Styles		4 1/2" Case Styles	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

DC MICROAMMETERS Self-shielding meter movement

		Models			Models				Model
		125	127		25	27		29	
0-50	1800	04210	04260	\$47.85	03760	03860	\$48.75	03960	\$52.35
0-100	1800	04220	04270	43.20	03770	03870	44.70	03970	49.65
0-200	1100	04230	04280	39.30	03780	03880	41.10	03980	44.70
0-500	90	—	—		03790	03890	40.35	03990	43.95
25-0-25	1800	—	04243	49.65	—	03900	49.20	04000	52.65
50-0-50	1800	04194	04245	43.95	03810	03910	44.70	04010	49.95
100-0-100	1100	04196	04247	39.90	03820	03920	41.55	04020	45.30
500-0-500	43	—	—		03830	03930	37.65	04030	41.55

TAUT-BAND DC MICROAMMETERS Self-shielding

		Models			Models		Model	
		125T	127T		25T	27T		29T
0-5	5750	—	—		03738	03838	90.00	03938
0-10	4900	04197	04246	75.75	—	03839	79.20	03939
0-15	1960	—	04248	69.45	03741	03841	70.80	03941
0-25	1960	04201	04251	65.85	03751	03851	69.00	03951
0-50	960	—	04261	51.60	03761	03861	52.65	03961
0-100	500	—	—		03771	03871	48.75	03971

Range	Approx. Impedance (ohms) @ 60 Hz	2 1/2" Case Styles		3 1/2" Case Styles		4 1/2" Case Styles	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

AC VOLTMETERS Iron-vane type meter movement

		Models				Models				Model	
		155	157			55	57			59	
0-1.5	3	—	—	\$36.15	—	—	\$37.95	08710	\$42.15		
0-3	12	—	—		08540	08720					
0-5	33	—	09390		08410	08550		39.00		08730	
0-10	133	—	09400		08420	08566	08740				
0-15	300	—	09420		08430	08580	37.95	08750			
0-25	833	—	09440		08440	08599	08760				
0-50	3,333	09290	09450	—	08450	08610	—	08770			
0-100	16,166	—	09460	37.35	08460	08620	39.30	08780	43.20		
0-150	25,000	09310	09470	37.95	08470	08630	40.35	08790	44.10		
0-250	41,166	09320	09490		08480	08650		08800			
0-300	50,000	09330	09500		08490	08660		08810			
0-500	83,333	09340	09520	47.85	08500	08680	51.15	08820	54.45		
0-750	125,000	—	—	—	08510	08690	51.15	08830	59.25		
0-1000	166,666	—	—	—	—	08700	59.25	08840	60.90		

Range	Approx. Impedance (ohms) @ 60 Hz	2 1/2" Case Styles		3 1/2" Case Styles		4 1/2" Case Styles	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price

AC AMMETERS Iron-vane type meter movement

		Models			Models			Model	
		155	157		55	57		59	
0-1	.213	02100	02270		00950	01120		01290	
0-1.5	.105	—	—		00960	01130		01302	
0-2	.065	02120	02290		00970	01140		01310	
0-3	.028	02130	02300	\$34.50	00980	01145	\$36.15	01320	\$38.25
0-5	.008	02140	02310		00990	01160		01330	
0-10	.004	02150	02320		01001	01170		01340	
0-15	.0025	02160	02330		01010	01180		01350	
0-25	.002	02170	02340		01020	01190		01360	
0-30	.0015	02180	02350	35.55	01030	01200	37.65	01370	39.90
0-50	.001	02190	02360		01040	01210		01380	
0-75	.0002	—	—		03432	03434	40.35	03436	43.20
0-75	.008	02200†	02370†		—	—		—	
0-100	.008	02210†	02380†		01060†	01230†		01400†	
0-150	.008	02220†	02390†	34.50	01070†	01240†		01410†	
0-200	.008	—	—		01080†	01250†	36.15	01420†	38.25
0-250	.008	02240	02410†		01090†	01260†		01430†	
0-300	.008	—	02420†		01100†	01270†		01440†	
0-500	.008	02260†	02422†		01110†	01280†		01450†	

‡ External multipliers, Model 183 (featured on page 21), are furnished on AC meters having a range of 500 volts or higher. All others are self-contained.

† These meters are 5 amp meters with scales as indicated and require external current transformers. See listings on page 21.

AC MILLIAMMETERS Iron-vane type meter movement

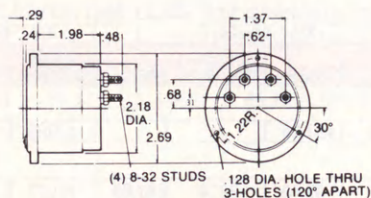
		Models			Models			Model	
		155	157		55	57		59	
0-10	1650.0	—	—	34.50	—	05440	36.15	05510	38.25
0-15	887.0	—	—		05380	05499		—	
0-25	270.0	—	—		—	05460		05530	
0-50	80.0	—	06130		05400	05470		05540	
0-100	17.2	—	06140		05410	05480		05550	
0-250	3.1	06080	06150		05420	05490		05560	
0-500	.9	06090	06152		05430	05500		05570	

DC GALVANOMETERS

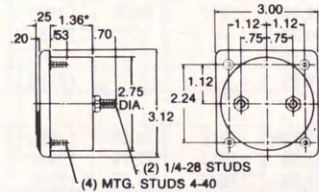
Range	Sens. μ A	Res. Ω	Models 125 127		Models 25 27		Model 29	
			Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
50-0-50	500-0-500	43	03670	\$37.65	03630	\$39.30	03650	\$41.55
50-0-50	75-0-75	1800	—	03680	40.35	—	03640	43.95

CONTINUED ON FOLLOWING PAGE

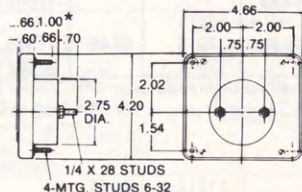
ROUND and RECTANGULAR METERS AS LISTED ON PAGES 12 and 13 DIMENSIONS in Inches



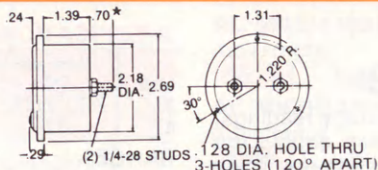
2 1/2" Model 175



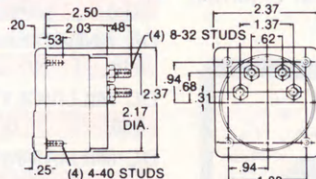
3 1/2" Models 27 27T, 37, 47, 57
*57 Barrel Length 1.45



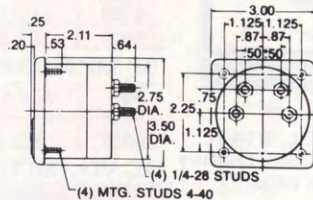
4 1/2" Models 29, 29T, 39, 49, 59
*159 Barrel Length 1.09



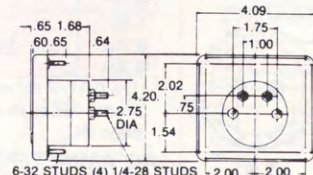
2 1/2" Models 125, 135, 145, 155
*135 Stud Length .63



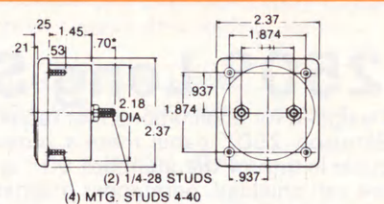
2 1/2" Model 177



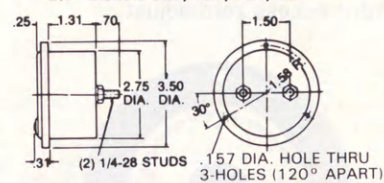
3 1/2" Model 77



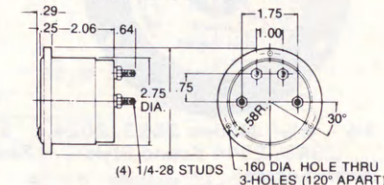
4 1/2" Model 79



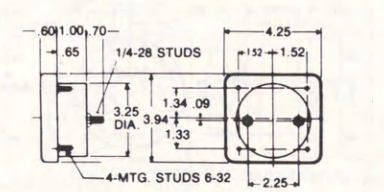
2 1/2" Models 127, 137, 147, 157



3 1/2" Models 25, 25T, 35, 45, 55



3 1/2" Model 75



4 1/2" Model 142

Round and Rectangular cont.

Range	Approx. Impedance (ohms) @ 60 Hz	2 1/2" Case Styles Cat. Nos. Price	3 1/2" Case Styles Cat. Nos. Price	4 1/2" Case Styles Cat. No. Price
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AC VOLTMETERS Rectifier type, self-shielding meter movement

Models:	45	47	49
0-1	—	08120	08300
0-3	—	08130	08310
0-5	—	—	08320
0-10	—	—	08330
0-15	—	—	08340
0-50	—	—	08350
0-100	—	08180	08360
0-150	08010	08190	08370
0-300	—	—	08371

AC MILLIAMMETERS Rectifier type, self-shielding

0-1	600	06820	06850	06880
0-2	400	—	06860	06890
0-5	200	06840	06870	06900

AC MICROAMMETERS Rectifier type, self-shielding

0-100	3400	04080	04120	04160
0-200	2400	—	04170	04170
0-300	1800	—	04140	04180
0-500	1200	—	04150	04190

RF AMMETERS Self-shielding

Models	135	137	Models	35	37	Model	39
0-1	.343	01901	01980	00670	00750	00870	—
0-1.5	.200	01910	02000	—	00770	00880	—
0-2	.120	—	02010	—	00780	00890	—
0-2.5	.10	01930	—	—	00800	00900	—
0-3	.08	01940	02040	00710	00810	00910	—
0-5	.045	01950	02060	00720	00830	00920	—
0-8	.031	—	02080	—	00850	00930	—
0-10	.023	—	02090	00736	00860	00940	—

*The standard wattmeter is unsuitable for use at low values of power because the power dissipated in the meter itself becomes an appreciable portion of the meter reading. This error is corrected in a COMPENSATED wattmeter.

Range	Approx. Impedance (ohms) @ 60 Hz	2 1/2" Case Styles Cat. Nos. Price	3 1/2" Case Styles Cat. Nos. Price	4 1/2" Case Styles Cat. No. Price
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RF MILLIAMMETERS Self-shielding meter movement

Models:	35	37	39
0-115*	5.5	—	05290
0-150	4.5	05260	05300
0-250	3.5	05270	05310
0-500	.63	05280	05320

*0-100 uniformly divided scale

WATTMETERS Dynamometer type, single phase. Accuracy: $\pm 2\%$

Range	Maximum Volts	Models	175	177	Models	75	77	Model	79
0-75	150	1.0	—	10860	—	—	10650	10720	—
0-150	150	2.0	—	—	—	—	—	10730	—
0-300	150	4.0	—	—	—	—	10600	10740	—
0-600	300	4.0	—	—	—	—	10680	10750	—
0-750	150	10.0	—	10900	—	—	10690	10760	—
0-1500	300	10.0	—	10910	—	—	10700	10770	—
0-3000	300	20.0	—	10920	—	—	10710	10780	—

COMPENSATED WATTMETER Single phase. Accuracy: $\pm 3\%$

0-20	300	.400	—	—	—	—	—	10714
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dB METERS Self-shielding. Zero power level: 6 mW into 500 Ω line

Range	Approx. Ω	Model 47	Price	Model 49	Price
-10 to +6 dB	5000 ohms	03450	\$53.85	03460	\$58.05

VU (Volume Level) METERS† Self-shielding

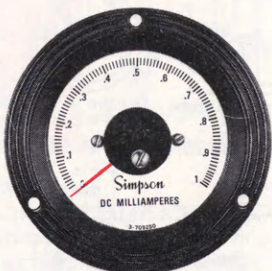
Reference level: 1 mW into 600 Ω line

Scale	Model 47	Model 142
A—Scale, Not Illuminated	10450	63.45
B—Scale, Not Illuminated	—	10460
A—Scale, Illuminated†	—	10530
B—Scale, Illuminated†	—	10470
	—	10540

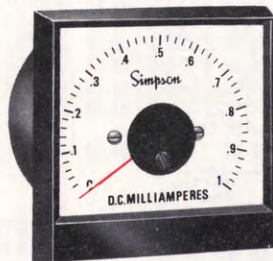
†Simpson VU meters meet all the electrical and ballistic specifications established by Bell Laboratories and American National Standards Institute as required by broadcasting, communication and sound engineers. They are available with either type A or B scales. Type A scale stresses the level in VU for monitoring wire lines. Type B scale stresses per cent use of transmitter output and is the standard for broadcast service. Impedance is 3900 Ω at "0" VU deflection.
†2 bulbs, 6 V 150 mA

250° Long Scale

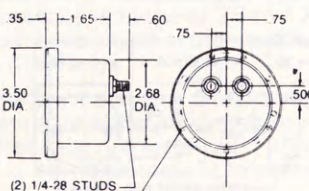
Designed for applications that require high-accuracy readings, Simpson 250° panel meters provide more than double the scale length of the standard 90° or 100° movements. They are self-shielded, permanent magnet, moving coil instruments with non-magnetic pivots and spring-backed jewels. External front access zero adjust.



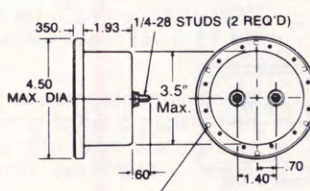
3 1/2", 4 1/2" Models 2523, 2524, 2543, 2544 Round Style (Sealed cases)



3 1/2" Models 2123L, 2143L. Same dimension as 3 1/2" Century Series shown on page 11



3 1/2" Models 2523, 2543, 2583



4 1/2" Models 2524, 2544

SPECIFICATIONS

Size	Type and Model Number DC	AC Rectifier	Scale Length	Accuracy	Pointer
3 1/2"	2523, 2123L	2543, 2143L	4.77" (121 mm)	DC: $\pm 2\%$ F.S. AC: $\pm 3\%$ F.S.	Red, knife edge
4 1/2"	2524	2544	6.54" (166 mm)		

RANGES

250° Meters		3½" Models				4½" Models	
Range	Resistance Approx.	2523 Cat. No.	Price	2123L Cat. No.	Price	2524 Cat. No.	Price

DC AMMETERS

0-10	.005 Ω	17976	\$83.25	—	17986	\$88.50
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DC MILLIVOLTMETERS

0-50	10 Ω	17977	\$83.40	17914	\$67.05	17987	\$88.80
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DC MILLIAMMETERS

0-1	135.0 Ω	17973	\$79.20	17913	\$64.95	17983	\$84.45
0-10	10.0 Ω	17974	\$79.20	—	—	17984	\$84.45
0-500	0.2 Ω	17975	\$83.25	—	—	17985	\$88.50
1-0-1	50.0 Ω	17996	\$79.35	—	—	17997	\$84.30

DC MICROAMMETERS

0-50	8000 Ω	17970	\$96.30	17910	\$78.45	17980	\$104.55
0-100	4200 Ω	17971	\$93.30	17911	\$72.15	17981	\$99.00
0-500	340 Ω	17972	\$84.30	17912	\$67.05	17982	\$89.70

AC VOLTMETERS Rectifier type

	Impedance Approx.	2543		2143L		2544	
Range		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
0-10		17990	103.95	—		17995	109.20
0-30	2000 Ω /volt	—		17915		—	
0-150		17978	103.95	17916	84.45	17988	109.20
0-300		17979		17917		17989	110.40

The 0-10 V AC rectifier type voltmeters above may be used with Current Transformer Model 186 to provide 17 common AC ammeter ranges from 0-50mA to 0-50A. (See page 21.)

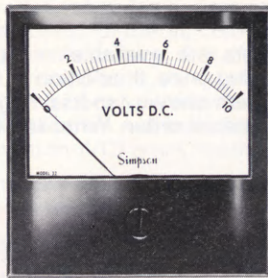
AC AMMETERS

0-5	0.5 VA	—	17918	\$84.45
0-150%	Maximum load*	—	17919	\$84.45

*0-5 amp movement

**Internal transformer burden

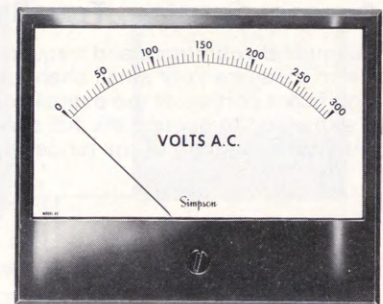
Simpson® Metal Cased "Rugged Seal" Panel Meters



3 1/2" Models 3323, 3343



4 1/2" Models 3324, 3344



4" x 6" Models 3326, 3346

This line of metal-cased panel meters is ideal for use in field test equipment or wherever rigorous environmental conditions are encountered. They are completely sealed, commercially ruggedized, glass window, metal cased and shielded. Not affected by steel panel mounting.

SPECIFICATIONS

Size	Type and Model Number	Accuracy (% of full scale)	Scale Length	Pointer
3 1/2"	3323 3343	DC Meters: ±2%	2.74" (70 mm)	Knife-edge, Black
4 1/2"	3324 3344	AC Rectifier Meters: ±3%	4.05" (103 mm)	
4" x 6"	3326 3346		4.94" (125 mm)	

Range	Approx. Resistance (ohms)	3 1/2" Case Style Cat. No. Price	4 1/2" Case Style Cat. No. Price	4" x 6" Case Style Cat. No. Price
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DC VOLTMETERS Self-shielding meter movement

Model 3323	Model 3324	Model 3326
0-1.5	16000	—
0-10	16005	—
0-15	16010	—
0-25	16015	—
0-50	16020	—
0-100	16025	—
0-500	16030	—

DC AMMETERS Self-shielding meter movement

0-5	Internal Shunt	16035	—
0-10	75 mV max.	16040	47.10

DC MILLIVOLTMETERS Self-shielding meter movement

0-50	10	16062	46.20	16157	50.85	16252	55.65
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DC MILLIAMMETERS Self-shielding meter movement

0-1	80 Ω	16045	44.70	16140	48.15	16235	53.25
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Range	Approx. Resistance (ohms)	3 1/2" Case Style Cat. No. Price	4 1/2" Case Style Cat. No. Price	4" x 6" Case Style Cat. No. Price
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DC MICROAMMETERS Self-shielding meter movement

		Model 3323		Model 3324		Model 3326	
0-50	3000	16055	\$59.25	16150	\$63.60	16245	\$68.85
0-100	1450	16060	53.55	16155	58.05	16250	64.20

AC VOLTMETERS Rectifier type, self-shielding meter movement

		Model 3343		Model 3344		Model 3346	
0-150	1000 ohms	16065	55.35	16160	58.35	16255	64.20
0-300	per volt	16070	55.35	16165	58.35	16260	64.20

AC AMMETERS Rectifier type, shielded case not affected by magnetic mounting

0-5	0.5 VA maximum*	16080	68.70	16175	71.40	16270	77.25
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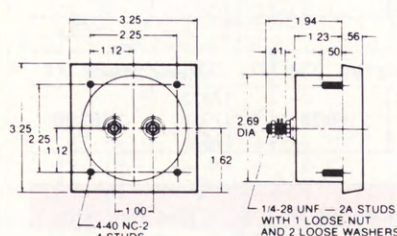
AC MILLIAMMETERS Rectifier type, self-shielding meter movement

0-1	600	16085	54.90	16180	58.05	—	—
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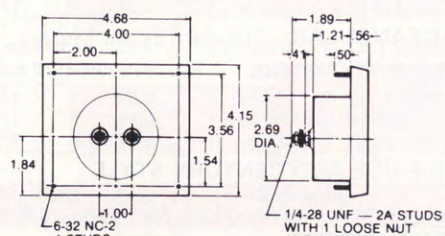
AC MICROAMMETERS Rectifier type, self-shielding meter movement

0-100	4000	—	—	16185	60.45	—	—
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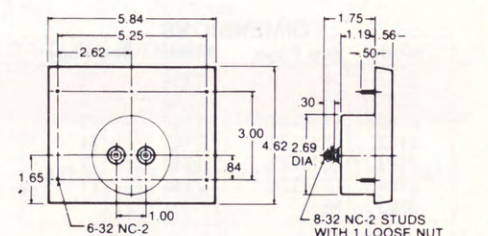
* Internal transformer burden



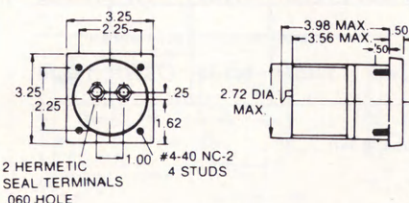
3 1/2" Models 3323, 3343



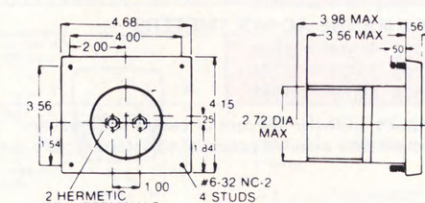
4 1/2" Models 3324, 3344



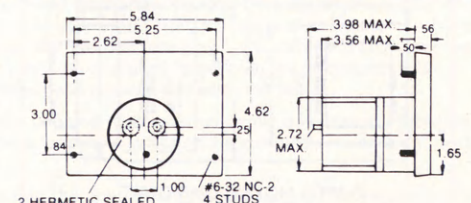
4" x 6" Models 3326, 3346



3 1/2" Models 3383 - Page 16



4 1/2" Model 3384 - Page 16



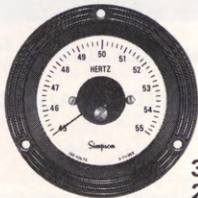
4" x 6" Model 3386 - Page 16

Simpson® Segmental Scale Panel Meters

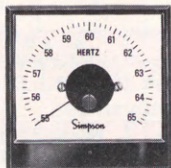
Average Sensing, True RMS and Frequency Meters

Segmental voltmeters and frequency meters make it possible to measure very small changes in input condition. The significant portion of the overall voltage or frequency range is expanded to occupy the full scale length. Thus, only the important segment of the range appears.

AC segmental voltmeters are available in either average sensing or true rms sensing units. In addition to the standard expansions and accuracies shown, special segmental voltmeters can be built on special order. Write to Simpson for a quotation.



3 1/2" Models
2543, 2583

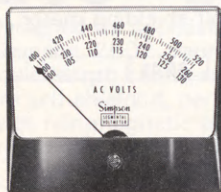


3 1/2" Models
2143L, 2183L



3 1/2" Models
2143, 2183,
3383

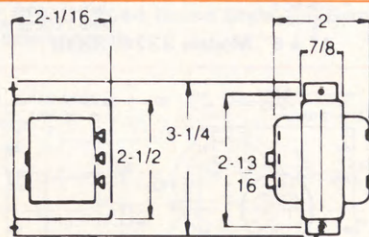
4 1/2" Models
2144, 2184,
3384



4 1/2" Model 2144
4 1/2" Model 1349

DIMENSIONS

Model	See Page	Model	See Page
2543	14	3384	15
2583	14	3386	15
2143L	11 (2143)*	1347	7
2183L	11 (2173)*	2143	11
2183	11 (2123)	1349	7
2184	11 (2124)	2144	11
3383	15		



2-MTG HOLES 3/16 DIA
External Potential Transformer
4 1/2" Models 1349, 2144

* Only 2 electrical terminals on horiz. centerline.

SPECIFICATIONS

Wide-Vue and Century		Round and Rectangular	Rugged Seal
Average Sensing AC Segmental Voltmeters		Frequency Meters	RMS Sensing AC Segmental Voltmeters
Range	Single Range	Multi-Range	
100-130 AC volts	100-130 AC volts	100-130 200-260 AC 400-520 volts	45-55 Hz 55-65 Hz 380-420 Hz
Accuracy (% of Center Scale Value)	±.5%	100-130 ±.5% 200-260 ±.75% 400-520 ±.75%	45-55 Hz ±0.5% 55-65 Hz ±0.5% 380-420 Hz ±0.3%
Frequency Range	20-2000 Hz	50-1000 Hz	—
Center Scale Value	115 volts	115/230/460 volts	50/60/400 Hz
Sensitivity or Power Consumption	.6 to 1.3 VA (Sensitivity decreases as input voltage increases)		1.6 VA
Max. Input Voltage (10 Seconds)	150 volts rms	150/300/600 volts rms	150 V rms 110/120 V Normal**
Square Wave Waveform Influence	11%		—
Triangular Wave	5%		—
Voltage Influence 108-132 volts	—	—	45-55 Hz ±0.2% 55-65 Hz ±0.2% 380-420 Hz ±0.12%
Movement Type	All self-shielding		
Pointer	All Black knife edge except Wide-Vue which is spade		

STOCK RANGES

**For 240 V input order Multiplier (p. 59) Cat. No. 08551 ... \$13.50

Range	Value	Center Scale Accuracy†	3 1/2" Cat. No.	Price	4 1/2" Cat. No.	Price
ROUND—250° Long Scale Meters						
AC VOLTMETERS—Average Sensing						
100-130	115V	— 0.5%	Model 2543 17991	\$107.85	—	—
FREQUENCY METERS						
45-55 Hz	50 Hz	0.5%	Model 2583 17992	109.65	—	—
55-65 Hz	60 Hz	0.5%	17993	—	—	—
380-420 Hz	400 Hz	0.3%	17994	—	—	—

RECTANGULAR—250° Long Scale Meters

AC VOLTMETER—Average Sensing						
100-130	115V	0.5%	Model 2143L 17926	107.85	—	—
FREQUENCY METERS						
45-55 Hz	50 Hz	0.5%	Model 2183L 17007	110.55	—	—
55-65 Hz	60 Hz	0.5%	17008	—	—	—
380-420 Hz	400 Hz	0.3%	17009	—	—	—

RECTANGULAR—Standard Scale Meters

FREQUENCY METERS						
45-55 Hz	50 Hz	0.5%	Model 2183 17920	100.20	17923	—
55-65 Hz	60 Hz	0.5%	17921	—	17924	\$103.20
380-420 Hz	400 Hz	0.3%	17922	—	17925	—

WIDE-VUE AND CENTURY STYLE

Range	Center Scale Value	Accuracy†	3 1/2" Cat. No.	Price	4 1/2" Cat. No.	Price
AC VOLTMETERS—						
Average Sensing						
100-130	115 V	0.5%	Model 1347 10152	\$115.95	Model 2143 17548	\$115.95
200-260	230 V	0.75%†	—	—	Model 1349 10155	\$116.55
400-520	460 V	0.75%	—	—	Model 2144 17638	\$116.55
TRIPLE RANGE AC VOLTMETERS						
100-130	115 V	0.5%	—	—	10157†	143.70
200-260	230 V	0.75%†	—	—	—	17639†
400-520	460 V	0.75%	—	—	—	143.70

† Accuracy shown in percent of center scale values

† Supplied with external potential transformer. See dimensions at left.

Simpson® Pyrometers

Available in a variety of styles and ranges, all models are manufactured with ambient (bi-metal) cold-junction and circuit copper compensation. Accuracy: 2% (Model 3326, 1%). Each pyrometer is furnished with an external, adjustable series resistor to permit use of lower resistance thermocouples in the field. Thermocouples are not included; see page 21 for available Iron/Constantan (I/C) and Chrome/Alumel (C/A) types.

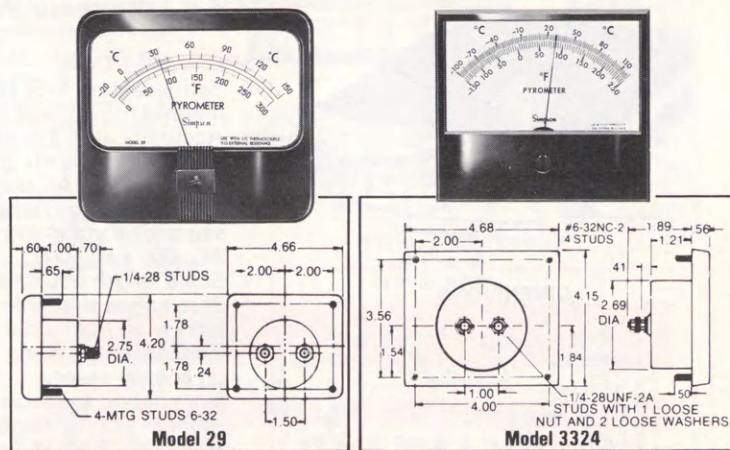
Simpson pyrometers are available in the following models: **Model 29**, standard phenolic (see photo and dimensions at right).

Model 2123, 3½" Century Series case style (see photo and dimensions, page 11). °C above, °F below.

Model 2124, 4½" Century Series case style (see photo and dimensions, page 11). °C above, °F below.

Model 3324, 4½" Rugged steel, metal-cased for extreme conditions (photo and dimensions at right).

Model 3326, 4" x 6" case style (see photo and dimensions, page 53). Has mirror scale; °C above, °F below.



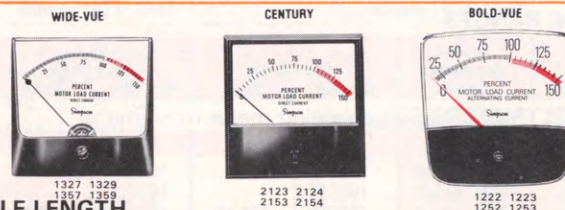
Temperature Range °F °C		Thermo- couple type required†	Max. External Resist. (Ω)	Approx. Sensitivity (mA)	Model 29 Cat. No.	Price	Model 2123* Cat. No.	Price	Model 2124* Cat. No.	Price	Model 3324 Cat. No.	Price	** Model 3326* Cat. No.	Price
-150 to +250*	-100 to +120*	I/C	10	.40	21200	\$62.55	21365		21373		21201		21381	
0 to +300*	-20 to +150*	I/C	10	.40	21202		21366		21374		21203		21382	
0 to +500*	-20 to +260*	I/C	10	.35	21204	72.15	21367	\$70.05	21375	\$72.15	21205	\$101.40	21383	\$103.50
0 to +750*	-20 to +400*	I/C	10	.30	21206						21207			
0 to +800	-20 to +425	I/C	10	.30			21368		21376				21384	
0 to +1000	-20 to +540	I/C	10	.28	21208		21369		21377		21212		21385	
0 to +1500	-20 to +820	C/A	10	.42	21209		21370		21378		21213		21386	
0 to +2000	-20 to +1100	C/A	10	.43	21210	67.35	21371	64.65	21379	67.35	21214	93.15	21387	98.55
0 to +2500	-20 to +1380	C/A	10	.40	21211		21372		21380		21215		21388	

*Taut-Band. **1% Accuracy. †Thermocouple not supplied with pyrometer. I/C and C/A types are available from stock as accessory items (see page 21).

Simpson® Percent Motor Load Panel Meters

Provide visual monitoring of the load conditions of AC or DC motors while they are running. Depending on the application, such monitoring can help prevent overloading and motor burn-out, establish and maintain optimum operating load conditions, or indicate the need for tool sharpening or replacement.

Meter scales show percent load from 0 to 150%; scale is green 0-100%, yellow 100-125%, red 125-150%. Accuracy: ± 2% F.S. AC load meters can be used with all AC motors of any horsepower, voltage, commercial frequency or phase.



SCALE LENGTH

Style Size	WIDE-VUE	CENTURY	BOLD-VUE
2½"	—	—	2.21" (56.1 mm)
3½"	3.14" (79.7 mm)	2.75" (69.8 mm)	3.05" (77.4 mm)
4½"	3.93" (100.0 mm)	4.09" (103.9 mm)	—

SPECIFICATIONS AND STOCK RANGES

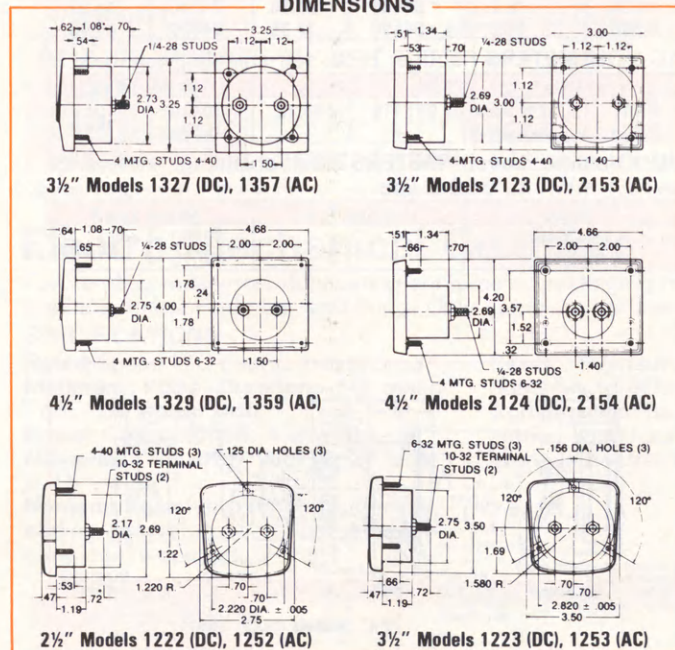
TYPE	RATING	Model No.	2½" Cat. No.	Price	Model No.	3½" Cat. No.	Price	Model No.	4½" Cat. No.	Price
DC (Note 1)	30 mV	1222	15506		1223	15594		—	—	—
		—	—		1327	07028		1329	07029	—
		—	—	\$42.15	2123	17564	\$43.95	2124	17637	\$49.95
AC (Note 2)	5 amps	1252	15599		1253	15638		—	—	—
		—	—		1357	03171		1359	03301	
		—	—		2153	17711		2154	17756	

Note 1: DC load meters require an external shunt and potentiometer (not supplied). Use 8 to 10Ω 2 watt wire-wound potentiometer. The appropriate shunt should be selected from page 21 and ordered separately. To select the proper shunt, first obtain the full-load current rating of your motor from the name plate, manufacturer's specifications of N.E.C. listing. Multiply that rating by 1.25 and select and order the shunt with an "amps" rating as large or slightly larger than the calculated value. Installation and calibration instructions are included with the meter.

Note 2: AC load meters must be used with external donut transformers listed on page 21. Complete instructions for proper selection are included with each AC load meter.

Advance assistance in selecting the appropriate transformer and determining the correct primary/secondary turns ratio can be obtained from your local Simpson representative or by contacting the Simpson Distributor Center.

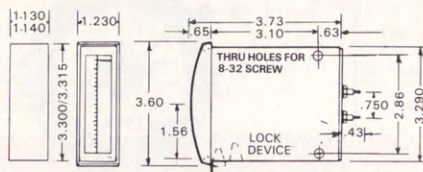
DIMENSIONS



Simpson® Edgewise Panel Meters



DIMENSIONS



3 1/2" Edgewise Panel Meter

SPECIFICATIONS

- Self-shielding 1-5/16" core magnet movement.
- Accuracy at $\pm 2\%$ of full scale $\pm 1\%$ available on special order.
- Rectifier type AC units are available up to 5 amps, and segmental voltmeters 100-130 V AC also available.
- Scale length equal to 2.6"
- Zero adjust available from the front (screw on right side).
- Horizontal mounting . . . vertical on special order.
- Illumination available.
- Highest self contained range is 10 amps DC, 5 amps AC and 500 volts AC and DC.

STOCK RANGES

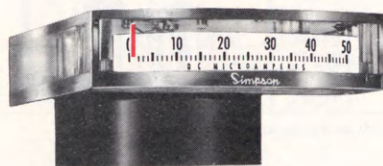
DC MODEL 3623	Approx. Ω	Cat. No.	Price
0-25 μA DC*	2,730	16862	\$71.55
0-50 μA DC*	1,010	16863	67.50
0-100 μA DC*	400	16864	63.90
0-200 μA DC	400	16865	60.15
0-500 μA DC	166	16866	58.35
25-0-25 μA DC	1,010	16867	67.95
0-1 mA DC	62	16868	56.85
4-20 mA DC	1	16869	62.40
0-50 mV DC	10	16870	58.50
0-25 V DC	1000 Ω/V	16873	60.45
0-50 V DC	1000 Ω/V	16874	
0-10 V DC	1000 Ω/V	16880	
0-15 V DC	1000 Ω/V	16881	

AC MODEL 3643

0-5A, Rect.	**	16871	80.25
100-130 V AC, Seg.	500 Ω/V	16879	145.65

* Taut-band movement

** Internal transformer burden: 0.5 VA



1 1/2" and 2 1/2" Edgewise Barrel Type Panel Meters

When panel designs call for making every square inch count, or when weight-saving is important, Simpson edgewise meters solve these many design problems. These meters are supplied with complete hardware which includes the bezel and two nuts. Horizontal mounting, vertical on special order.

SPECIFICATIONS

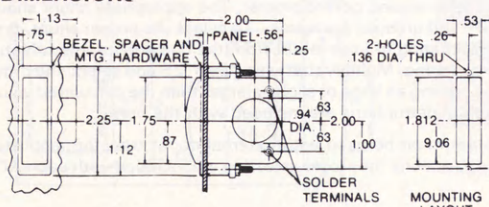
Models	1 1/2" 1521, 1541	2 1/2" 1522, 1542
Accuracy	DC $\pm 2\%$ of full scale; AC rectifier type $\pm 3\%$	
Movement Type	Self-shielding meter movement	
Scale Length	1.375" (35 mm)	1.875" (47.6 mm)
Pointer	Lance, Red	
Case Construction	Dustproof, molded acrylic	
Terminals	Solder (ammeters—stud type)	

STOCK RANGES

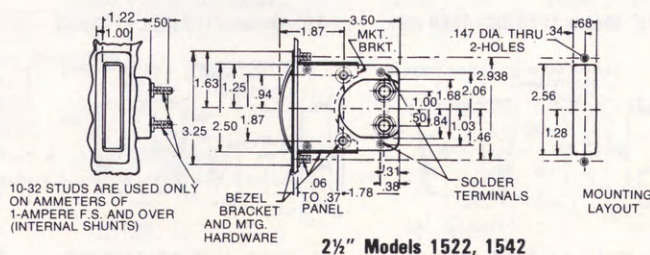
Range	Approx. Resistance (ohms)	1 1/2" Case Style Cat. No.	1 1/2" Case Style Price	2 1/2" Case Style Cat. No.	2 1/2" Case Style Price
DC VOLTMETERS Self-shielding meter movement					
		Model 1521		Model 1522	
0-10	1000 $\Omega/volt$	10354	\$36.15	10360	\$39.90
0-15	1000 $\Omega/volt$	10355		10370	
0-25	1000 $\Omega/volt$	10356		10375	
0-50	1000 $\Omega/volt$	10357	—	10380	40.20
0-150	1000 $\Omega/volt$	—		10390	
0-500	2000 $\Omega/volt$	—	—	10410	40.20
DC AMMETERS Self-shielding meter movement					
0-5	.010	—	—	03390	41.85
0-25	.002	—	—	03420	41.85
DC MILLIAMMETERS Self-shielding meter movement					
0-1	20.0	06811	35.55	06710	39.30
0-5	2.5	06812		06720	
0-10	13.5	06813		06730	
0-25	5.4	06815	37.35	06740	40.95
0-50	2.7	06816		06750	
0-100	1.35	06817		06760	
0-200	.49	06818		—	
0-500	.27	06819		06810	

Range	Approx. Resistance (ohms)	1½"		2"	
		Case Style Cat. No.	Price	Case Style Cat. No.	Price
DC MILLIVOLTMETERS Self-shielding meter movement					
		Model 1521		Model 1522	
0-50	10.0	07013	\$38.10	07011	\$41.85
DC MICROAMMETERS Self-shielding meter movement					
0-25	3150.0	—		04560	58.20
0-50	1800.0	04553	47.70	04570	51.15
0-100	1100.0	04554	42.15	04580	46.20
0-200	290.0	04555	38.10	04590	41.85
0-500	90.0	04556	37.35	04600	40.35
AC VOLTMETERS Rectifier type, self-shielding					
				Model 1542	
0-150	1000 Ω/volt	10415	47.10	10420	50.25
0-300	1000 Ω/volt	—		10430	
VU (Volume Level) METERS—Self-shielding. Reference level: 1 mW into 600 Ω line					
	Scale	Model 1541		Model 1542	
	A—Scale	—		10500	64.35
	B—Scale	—		10570	

DIMENSIONS



1 1/2" Models 1521, 1541



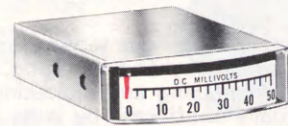
2 1/2" Models 1522, 1542

Simpson's miniature edgewise panel meter has a unique self-shielding core magnet movement that eliminates the protruding barrel which is prevalent in other edgewise meter designs. It lends itself to a meter that is modern and extremely compact. The scale extends nearly to the full width and height of the meter. An optimum scale display area permits the use of large easy-to-read numerals on a horizontal plane.

1 1/2" and 2 1/2" Stackable Edgewise Panel Meters

Models	1 1/2" 1921, 1941	2 1/2" 1622, 1642
Accuracy	±2% of full scale; AC rectifier types ±3%	
Movement Type	Self-shielding core magnet movement	
Scale Length	1.370" (35.8)	1.85" (47 mm)
Pointer	Lance, Red	
Case Construction	Steel housing with rustproof finish; plastic window; insulated terminals; dustproof construction	
Terminals	Solder type 6-32 studs	
Dielectric	1500 volts rms	
Panel Cutout	.525" x 1.718"	.562" x 2.312"
Hardware	Removable brackets with clamping screws	Bezel, bracket lockwashers and nuts

• For horizontal mounting.



• Vertical mounting available on special order.



STOCK RANGES

Range	Approx. Resistance (ohms)	1 1/2" Case Style Cat. No. Price	2 1/2" Case Style Cat. No. Price
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DC VOLTMETERS Self-shielding meter movement

Range	Approx. Ω	Model 1921	Model 1622
0-10	5000 Ω/volt	18000	18006
0-15		18001	18007
0-25		18002	18008
0-50		18003	18009
0-150		18004	18010
		\$46.80	\$49.35

DC MILLIVOLTMETERS Self-shielding meter movement

0-50	20.0	18028	18029	\$2.05
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DC MILLIAMMETERS Self-shielding meter movement

0-1	18.0	18012	18019	\$48.75
0-5	2.0	18013	18020	\$49.05
0-10	5.0	18014	18021	\$49.05
0-25	2.0	18015	18022	\$51.60
0-50	1.0	18016	18023	
0-100	.5	18017	18024	
0-500	.1	18018	18025	

Range	Approx. Resistance (ohms)	1 1/2" Case Style Cat. No. Price	2 1/2" Case Style Cat. No. Price
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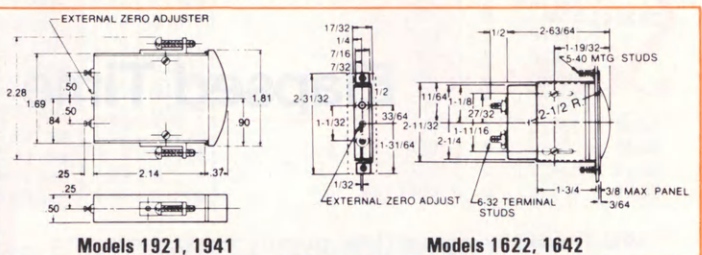
DC MICROAMMETERS Self-shielding meter movement

Range	Approx. Ω	Model 1921	Model 1622
0-25	7760	18030	18035
0-50	2020	18031	18036
0-100	1060	18032	18037
0-200	310	18033	18038
0-500	63	18034	18039
		\$59.85	\$60.75
		\$57.90	\$59.85
		\$51.30	\$56.55
		\$48.90	\$52.05
		\$46.50	\$50.40

AC VOLTMETERS Rectifier type

Self-shielding meter movement

Range	Approx. Ω	Model 1941	Model 1642
0-150	5000 Ω/volt	18042	18043
		\$58.20	\$61.05



4 1/2" Portable Instruments

MODEL 2100 Desk Top and Lab Bench Multi-Range Portables. For electrical measurements in schools, laboratories and industrial plants. Large easy-to-read scale, knife-edge pointer. DC and moving iron-vane AC meters have ±2% full scale accuracy; AC rectifier type meters ±3%. Color-coded binding posts. Overall size: 5.15" x 5.55" x 5.70", with 45° front slope.

RANGES	Catalog No.	Price	RANGES	Catalog No.	Price
DC VOLTMETERS			AC VOLTMETERS		
0-1.5-3-30 V	17954	\$59.40	Rectifier Type		
0-10-25-100 V	17955	\$61.05	0-3-15-150 V	17956	\$84.75
DC AMMETERS			0-30-150-300 V	17957	\$84.75
0-1.5-3-30 amps	17950	\$59.40	Moving Iron-Vane		
DC MILLIAMMETERS			0-150-300-600 V	17958	\$78.45
0-1-10-100 mA	17951	\$59.40	DC OHMMETER		
0-25-50-500 mA	17952	\$59.40	0-1 K-100K	17960	\$66.90
DC MICROAMMETER			(includes 1.5 V battery and #08376 test leads)		
0-10-50-250 μA	17953	\$113.85			

Special ranges can be made to meet your specifications.

Electro-Mechanical Counters

For vending machines, duplicating equipment, packaging machinery, and production line. Instant number switching. Only complete numbers visible.

SPECIFICATIONS

Rated Speed: 10 counts per second

Minimum Pulse Duration: 50 msec

"on," 50 msec "off"

Power Consumption: 4.2 watts

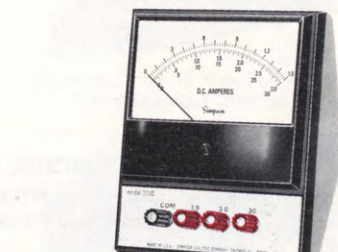
Numerals: White on black, 0.2" high, 0.15" wide

Numeral Switching: Ratchet principle, adding one count each time the operating coil is opened

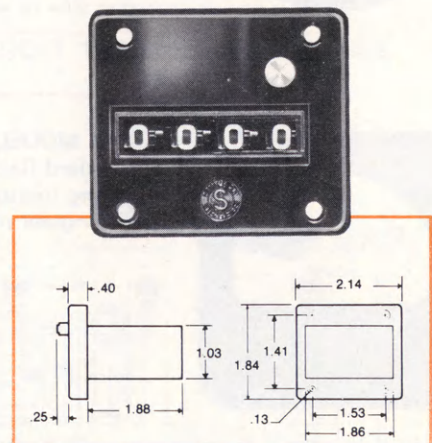
Reset: Pushbutton instantly resets numerals to 0000

Construction: Bezel of rugged thermo-setting materials, black matte finish. Heavy steel frame, aluminum cover.

Voltage ± 10%	Model	Catalog Number	Price
117 V AC, 60 Hz	103	12643	\$40.20
6 V DC	104	12641	
12 V DC	104	12642	



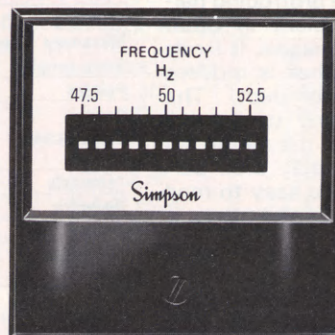
Portable Instrument Kit, without meter, for use with Simpson 4-1/2" meters. Two binding posts. Cat. No. 17949..... **\$14.55**



Simpson® Resonant Reed Frequency Meters

**High-Accuracy Extra-Rugged Reliable Meters,
All are 3½" size Century Model 2163**

Simpson Frequency Meters use tuned steel reeds for indicating AC frequency. The vibrating (resonant) reed is both the measuring and indicating element. Accuracy is virtually unaffected by wide changes in signal magnitude, phase, or wave-form and is basically dependent on only one component, the reed, whose calibration is inherently stable. With one moving part, construction is simple and sturdy.



Model 2163
Same case size as
2153 on page 11

SPECIFICATIONS

Frequency:
50 or 60 Hz nominal
No. of Reeds:
11 (general purpose)
Accuracy:
± 0.3% of
mid-scale

Temperature Coefficient:
- 0.017% per °C
max.
Operating Voltage:
100 to 150 V AC
Power Consumption:
2 watts max.
Power Required: 2 VA

STOCK RANGES

Hz Range	No. of Reeds	Hz Between Reeds	Cat. No.	Price
3½" Century Model 2163				
47.5-50-52.5	11	.5	03490	\$86.70
55-60-65	11	1	03496	86.70
57.5-60-62.5	11	.5	03491	80.25

Simpson® Elapsed Time Meters

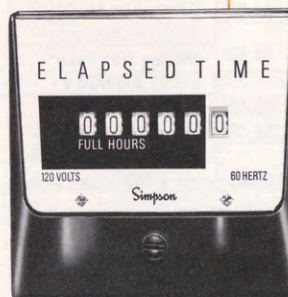
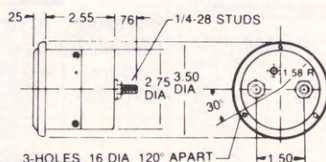
Widely used by research labs, manufacturing plants, and broadcast stations . . . to keep life and performance records based on operating time. Choice of Century, Wide-Vue, Rectangular or Round case styling to match other instruments.

SPECIFICATIONS AND RANGES

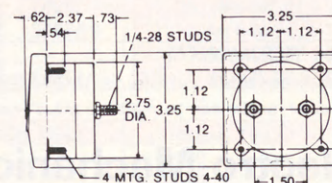
Operating Voltage (± 10)	Maximum Indication (hours)	Power Consumption	Accuracy	Model Size	Model No.	Cat. No.	Price
120 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	55ET	03580	\$47.55
120 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	1357ET	03595	
120 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	57ET	03590	
120 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	2153ET	17720	
240 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	55ET	03600	47.85
240 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	57ET	03610	
240 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	1357ET	03615	
240 V AC, 60 Hz	99,999.9	2.5 watts	synchronous	3½"	2153ET	17721	



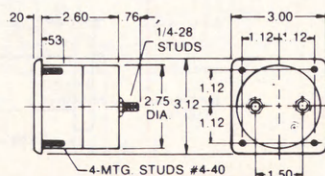
3½" MODEL 55ET
Standard Round Styling
(matches Model 45)



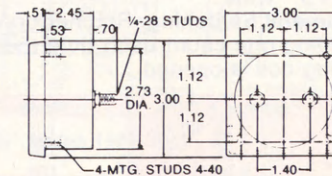
3½" MODEL 1357ET
Wide-Vue Styling



3½" MODEL 57ET
Standard Rectangular
Styling (matches Model 47
rectangular meters)



3½" MODEL 2153 ET
Century Series Styling



Simpson® Panel Meter and Controller Accessories

STOCK THERMOCOUPLES

Stock thermocouples are iron-constantan type, calibrated to 5 or 10 ohms $\pm 1\%$ as indicated in table.

Types 21221 and 21224 are iron-constantan thermocouple wire in a stainless steel overbraid for rugged service application where flexing or abrasion would cause deterioration of standard thermocouples.

Types 21222 and 21223 are iron-constantan thermocouples with a glass cloth overbraid. These thermocouples are suited for most general purpose use or for permanent mounting in protected sheaths or conduit.

Cat. No.	Type*	Resistance	Over-braid**	Length	Gage	Price
21221	I/C	5 ohms	SS	162"	20	\$31.80
21222	I/C	10 ohms	GC	137"	24	11.50
21223	I/C	10 ohms	GC	34"	30	9.65
21224	I/C	10 ohms	SS	325"	20	56.55
21231	C/A	10 ohms	SS	154"	20	35.40
21232	C/A	10 ohms	GC	90"	24	21.25
21230	C/A .42 ohm inconel protection tube, 1/4" x 2.0"					27.60
21233	C/A .64 ohm inconel protection 3/16" x 12" Disconnect Plug					32.10
23245	I/C, 3.6 ohms resistance with 5" x .187" dia. SS sheath and 10' leads					36.75
23246	C/A, 6.5 ohms resistance with 5" x .187" dia. SS sheath and 10' leads					36.75

* I/C—Iron-Constantan, C/A—Chromel Alumel

** SS—Stainless Steel, GC—Glass Cloth

Cat. No.	THERMOCOUPLE ACCESSORIES	Price
21234	10 ohm Extension Wire Kit 43' (use with 21233)	21.90
21235	10 ohm Extension Wire Kit 17' (use with 21233)	7.25
21236	Disconnect Jack (use with 21233)	18.75
21237	Compression Fitting SS 3/16" dia. (use with 21233)	12.00

These shunts are adjusted for a 50 millivolt drop for use with switchboard and panel ammeters where external shunts are required. Portable shunts have phenolic base and supply up to 200 amperes. Accuracy $\pm 1\%$. 5' leads included. 0.065 Ω resistance.

PORTABLE SHUNTS

Amps	Cat. Number	Price
1	06700	\$22.95
5	06703	
10	06704	
15	06705	
25	06707	
30	06708	
50	06709	
75	06711	
100	06713	
150	06714	
200	06715	

EXTERNAL PORTABLE AND SWITCHBOARD SHUNTS

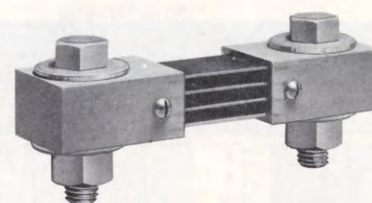
—For Use With DC Ammeters

SWITCHBOARD SHUNTS

Amps	Cat. Number	Price
100	06500	\$ 22.95
150	06503	24.60
200	06504	24.60
250	06505	24.60
300	06506	24.60
400	06507	29.85
500	06508	35.25
600	06509	40.95
750	06510	52.35
800	06511	55.35
1000	06512	67.20
1200	06513	79.80
1500	06514	99.00
2000	06515	109.65
2500	06516	138.30
3000	06517	163.50



Phenolic base is supplied on portable shunts up to 200 amperes



Switchboard type—100 through 3000 amps

Simpson external multipliers are available for immediate delivery from your local distributor in the ranges listed below. Other intermediate ranges are available on special order: DC volts to 5000; AC volts to 1000. Send your specifications for a quotation.

AC VOLTS—166 Ohms/Volt

Range	Multiplier		Meter Volt Drop	Cat. No.	Price
	Impedance (Ω) at 60 Hz	Volt Drop			
0-500	58,333	350	150	08562	\$18.45
0-600	75,000	450	150	08563	20.70
0-750	100,000	600	150	08564	22.80
0-1000	141,666	850	150	08565	26.85

DC VOLTS—2000 Ohms/Volt

Range	Multiplier Resistance Megohms	Meter Sensitivity DC μ A	Cat. No.	Price
0-500	1	500	08552	\$15.15
0-750	1.5	500	08553	15.75
0-1000	2	500	08554	15.75
0-1250	2.5	500	08555	15.75
0-1500	3	500	08556	17.25
0-2000	4	500	08557	17.25
0-2500	5	500	08558	17.70
0-3000	6	500	08559	17.70
0-4000	8	500	08560	18.60
0-5000	10	500	08561	20.55

FREQUENCY — for 240 V input, order Catalog No. 08551 \$13.50
See Frequency Meters, page 16.

CURRENT TRANSFORMERS —For Use With 0-10 V AC

Meters, Controllers and Recorders

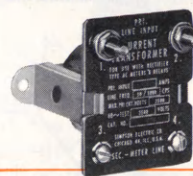
Designed for use with 0-10 volt AC meters. They convert meter relays to AC current control units. Transformer may be located remotely from indicating meter. Ranges from 0-50 milliamperes up to 0-50 amperes are available.

Frequency range: 50 Hz to 5 KHz. Accuracy: $\pm 2\%$. May be used with any 0-10 V AC rectifier type voltmeter, 1000 Ω /volt sensitivity or greater. Not for use in circuits where sustained overloads are possible.

Model 186

Range	VA	Cat. No.	Price
0-50 mA	0.40	01294	\$19.50
0-100 mA	0.50	01295	
0-200 mA	0.37	01296	
0-300 mA	0.48	01303	
0-500 mA	0.53	01304	
0-750 mA	0.37	01307	19.50

Range	V.A.	Cat. No.	Price
0-1 amp	0.42	01308	19.50
0-2 amp	0.54	01309	
0-3 amp	0.66	01311	
0-5 amp	0.75	01312	
0-10 amp	1.45	01314	
0-15 amp	1.05	01315	
0-20 amp	1.04	01316	
0-25 amp	1.50	01317	
0-30 amp	1.10	01318	
0-40 amp	1.09	01319	
0-50 amp	1.90	01321	

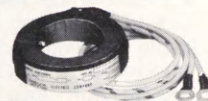


DONUT CURRENT TRANSFORMERS

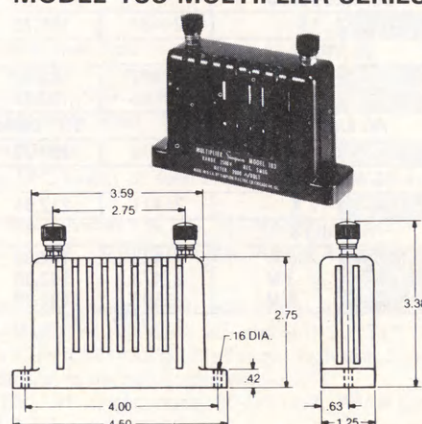
—For Use With AC Ammeters

Inserted one turn primary type for use with switchboard and panel ammeters where external transformers are required. Rated at 2 VA. Have 2' leads.

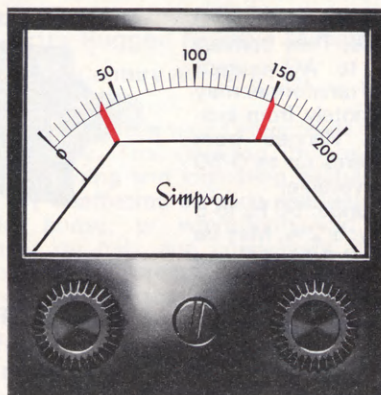
Ampere Ranges Primary	Secondary	Cat. No.	Price
50	5	01293	\$16.50
75	5	01306	
100	5	01297	
150	5	01298	
200	5	01299	
250	5	01313	16.50
300	5	01300	
400	5	01305	16.50
500	5	01301	
600	5	02303	
750	5	02459	
1000	5	02304	30.00



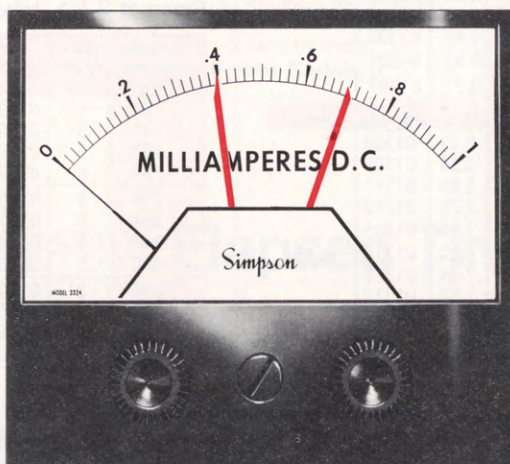
MODEL 183 MULTIPLIER SERIES



Simpson® "Rugged Seal" Controllers and Meter Relays



3 1/2"
Model 3323AIXA



4 1/2"
Model 3324AIXA

NEWLY IMPROVED 33 SERIES "RUGGED SEAL" CONTROLLERS AND METER RELAYS WITH AMPLIFIED INPUT

For a wide variety of control, alarm, limit applications

The 33 Series instruments on these two pages offer a wide variety of applications in control, alarm and limit use. Photo conductor sensing eliminates all interference with the indicating meter.

These newly-designed meter relays incorporate an amplifier input which drives a rugged high torque pivot and jewel meter. All voltage ranges are 20,000 Ω /volt (50 μ A) and all current ranges have a 50 mV drop.

Metal cased "Rugged Seal" construction withstands rigorous environmental conditions. High-gain transistor switch circuit provides accurate switching with a "dead band" of no more than 0.5% of full scale. Fail safe circuitry opens output relays in the event of power failure.

SPECIFICATIONS

Models 3323AIXA, 3324AIXA, 3344AIXA, 3326AIXA

Calibration Accuracy: $\pm 2\%$ of full scale

Control Point(s) Adjustment:

Single: 0-100% of arc

Double: Low limit: 0-95% of arc. High limit: 5-100% of arc. Adjustable to within 4° of each other.

Switching: Within 1% of indication

Differential: "On," "Off" difference is within 0.5% of F.S.

Repeatability: Within 0.5% F.S.

Frequency Response: 50-1000 Hz

Auto/Manual Reset: Latching function can be enabled independently for each relay by removing jumpers on terminal block.

Contacts/Output Relay: DPDT relay contacts for each control point except motor load types, SPDT low point.

Each set of contacts rated at 5 amps., 115 V AC.

Movement: Self-shielding annular

Power: 108-132 V AC, 50-60 Hz

Rated Circuit to Ground Voltage: 250 V RMS maximum.

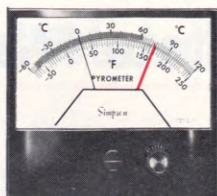
Case: Sealed metal case, glass window

33 SERIES METER RELAYS WITH CURRENT AND VOLTAGE INPUT

STOCK RANGES	Approx. Resistance (Ohms)	Single Setpoint (High Limit)		Double Setpoint		Single Setpoint (High Limit)		Double Setpoint		Single Setpoint (High Limit)	
		Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
DC MICROAMPERES		3½" Model 3323AIXA				4½" Model 3324AIXA				4x6" Model	3326AIXA
0-25	2 K	21438	\$206.10	21618	\$255.60						
0-50	1 K	21418	194.10	21619	243.45	21428	\$197.40	21626	\$246.90		
0-100	500	21419	188.25	21620	237.90	21429	191.40	21627	240.75	—	
DC MILLIAMPERES											
0-1	50	21420	180.45	21621	230.10	21430	183.75	21628	233.25	21600	\$189.45
DC AMPERES											
0-5	.01	21422	184.65	21622	236.25	21432	187.80	21629	239.10	—	
DC MILLIVOLTS											
0-50	1 K	21437	185.70	21623	234.60	21433	188.25	21630	237.90	—	
DC VOLTS											
0-1	20 K	21423	182.85	21624	234.00	21434	185.70	21631	237.90	—	
0-50	1 M	21425	182.85	21625	234.00	21436	185.70	21632	236.85	—	
AC AMPERES		3½" Model 3343AIXA				4½" Model 3344AIXA					
0-5	.01	21470	207.30	21633	256.80	21479	210.60	21637	260.40	—	
AC MILLIVOLTS											
0-100	2 K	21471	212.85	21634	264.15	21480	217.35	21638	266.70	—	
AC VOLTS											
0-10	200 K	21472	192.30	21635	241.65	21481	195.75	21639	245.25	—	
0-150	3 M	21473	192.30	21636	241.65	21482	195.75	21640	245.25	—	
0-300	6 M	21503	192.30	21641	241.65	21505	195.75	21642	245.25	—	

33 SERIES TEMPERATURE CONTROLLERS

Model 3324AIXA



—Simpson's new high impedance, solid-state circuit eliminates thermocouple lead length adjustments. Thermocouple resistance may be anywhere from 0 to 100 ohms. All ranges use Simpson's rugged 1 milliamp pivot-and-jewel meter movement. Electronic cold junction compensation is standard.

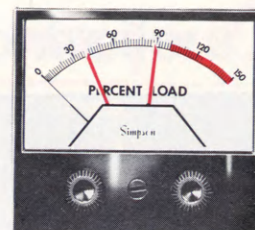
RANGES

Temperature Range	Thermocouple Type	SSP		DSP	
		Catalog No.	Price	Catalog No.	Price
-50 to +275°F	Iron Constantan	21400	\$210.45	21610	\$264.75
0 to 300°F		21401		21611	
0 to 500°F		21402		21612	
0 to 750°F		21403		21613	
0 to 1000°F		21404		21614	
0 to 1500°F	Chromel/Alumel	21405	210.45	21615	260.10
0 to 2000°F		21406		21616	
0 to 2500°F		21407		21617	

Thermocouples are not supplied. Available separately from list on page 21.

33 SERIES MOTOR LOAD METER RELAYS

Model 3344AIXA

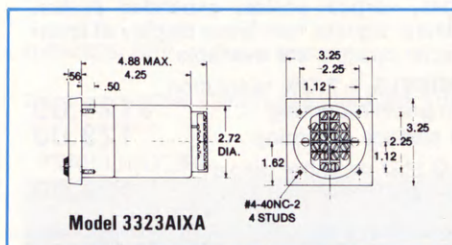


Now! Instrument can be field adjusted to match the rated load current for a motor with the 100% mark on the scale. Built-in adjustment potentiometer eliminates winding turns on current transformer. Built-in time delay eliminates the need for external time delays or manual overrides. Standard delay: 5 sec. Programmable 0-5 sec., using external resistor. Factory adjustable to 20 sec. Time delay occurs only when pointer is upscale of the setpoint, may be disabled with external jumper. No time delay on low setpoint. Scale: green 0-100%, red 100%-150%.

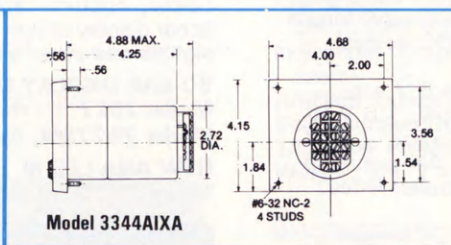
Scale	Range F.S.	Single Setpoint (high limit)		Double Setpoint	
		Cat. No.	Price	Cat. No.	Price
0-150%*	10 V AC	21522	\$203.25	21644	\$252.45
0-150%**	5 Amp AC	21520	218.70	21643	267.90

* Use with Model 186 current transformers—see page 21.

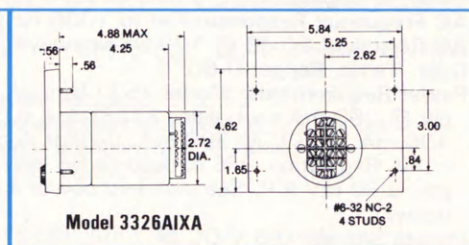
** Use with donut-type current transformers—see page 21.



Model 3323AIXA



Model 3344AIXA

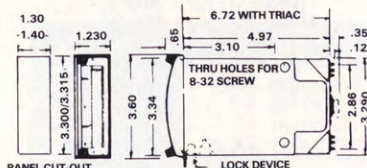
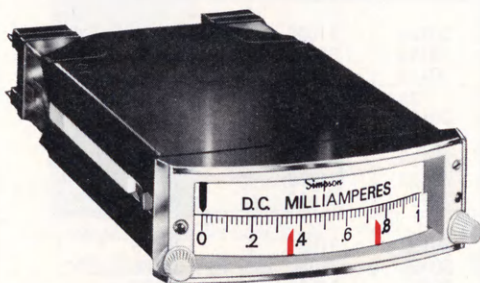


Model 3326AIXA

Simpson® 3½" Edgewise Controllers

COMPACT DESIGN OFFERS ALL THESE FEATURES

- Mode indication lamps
- Front panel mounting
- Integral mounting lock
- Removable set knobs
- Double or single setpoints
- Horizontal mounting, vertical on special order
- Other ranges—write for details



PANEL CUT-OUT

RANGE

DC MODEL 3623XA	Catalog No.	Price
0-50 microamps DC SSP†	19300	\$177.60
0-50 microamps DC DSP†	19301	226.80
0-100 microamps DC SSP†	19302	171.30
0-100 microamps DC DSP†	19303	220.95
0-1 milliamps DC SSP	19304	163.95
0-1 milliamps DC DSP	19305	213.60
0-50 millivolts DC SSP	19306	171.75
0-50 millivolts DC DSP	19307	218.40

†Taut-band movement

AC MODEL 3643XA	Catalog No.	Price
0-5 amperes AC SSP	19308	\$205.80
0-5 amperes AC DSP	19309	240.45
0-10 volts AC SSP*	19310	176.25
0-10 volts AC DSP*	19311	225.45
0-150 volts AC SSP	19312	176.25
0-150 volts AC DSP	19313	225.60

SSP—Single setpoint DSP—Double setpoint

* For use with Model 186 transformer, see page 21

OPTIONAL RELAY ASSEMBLY KIT. Includes one DPDT relay and connector rated 5 amperes at 120 V AC resistive each pole. Mechanical Life: 1,000,000 operations at rated load. Catalog No. 16898 \$13.65

OPTIONAL TRIAC SWITCH MODULE

Useful where surges or chatter of mechanical relays are undesirable. Our module fits in the standard edgewise relay socket and features:

- Zero firing circuitry
- Optical isolation of signal and load
- 4 amps @ 120 V AC 60 Hz, switch capacity at 25°C
- Normally open single pole-single throw

Catalog No. 16899 \$40.95

SPECIFICATIONS

MOVEMENT:

Type: Self-shielding core type

Accuracy: ± 2% of full scale standard, ± 1% special

Maximum Sensitivity: 10 DC microamps

Minimum Thermocouple Span: 300°F

CONTROL FUNCTIONS:

Load Switching: DPDT relay or solid-state triac available for each setpoint

Switching Accuracy: Within 1% F.S. of setpoint indication
Dead Band: "On," "off" differential less than .5% of F.S.

SETPOINTS:

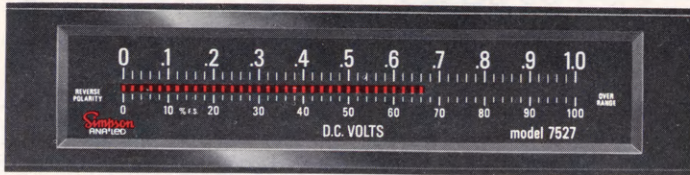
Knob Adjustable: Screwdriver adjust with knobs removed

Single Setpoint: High limit standard, adjustable 0-100% F.S.

Double Setpoint: Low limit 0-98% of full scale, high limit 2-100% of full scale. Setpoints are adjustable within 2°

Input Power: 115 V AC single phase, 50-500 Hz. 6 V A (double setpoint), 4 V A (single setpoint)

Simpson® Ana-Led® Solid-State Meter/Controllers



50-Bar Model 7527



New 50 LED Wide-Bar Ana-Led III Model 7528

SPECIFICATIONS

Accuracy: $\pm 2\%$ F.S.

Resolution: 1 part in 50

Linearity: $\pm 0.5\%$ of full scale

Temp. Coefficient: $\pm 0.1\%$ of F.S./ $^{\circ}\text{C}$

Response Time: DC ranges, 15 msec (AC ranges, less than 1.0 msec) (for non-control applications)

Overload Capability: 10 times full scale up to 25 V RMS

AC Frequency Response: Flat to 1000 Hz sinewave inputs

AC Rejection: 20 dB @ 120 Hz sinewave (DC ranges)

Oper. Temp. Range: 0-60 $^{\circ}\text{C}$

Power Requirements: Model 7527 B; dual ± 6 V supply @ 200 mA each side: 7528; dual supply, $+6$ V @ 400 mA, -6 V @ 300 mA. Voltage accuracy, ± 0.1 V. Regulation, 1% no load to full load. Allowable ripple, ± 60 mV P-P. See standard power supplies listed below.

Output Signals: 0-5 V DC @ 1 mA (7527 DC ranges only, 7528 all ranges). Signal and reference voltage for driving controller switching circuits and recording.

SETPOINT MODULES

Provide on/off or limit control by comparator action. Up to 50 modules can be used with each DC range Ana-Led. Each module is rated up to 1/2 amp at ± 24 V DC. For higher current or voltage control, add optional relay shown below. High-limit control modules are standard and are convertible to low-limit control in the field by jumper changes. Overall dimensions are: 1.56" H x 2.50" W x 3.18" D without relay. Through panel cutout: 1.44" H x 2.18" W. Front or rear panel mounting.



2-digit Setpoint module

Digital Setpoint Module with 2 digital thumb switches. Switching Accuracy: $\pm 1\%$. Resolution: 1 part in 100. Cat. No. 30205 \$74.75

Analog Setpoint Module with potentiometer, 0-100 scale. Accuracy: 2% F.S. Cat. No. 30208 47.75

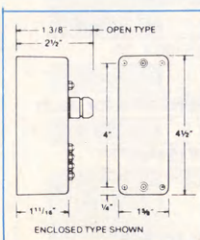
OUTPUT RELAY

DPDT Relay, 5 amp 115 V AC with plug-in connector, Cat. No. 30210 13.75

ANA-LED POWER SUPPLY

Designed for use with the Ana-Led meter. Accepts 120 V AC or 240 V AC power by jumper selection. Supplies dual ± 6 V DC. Mounting can be remote or to rear of meter.

Enclosed type, No. 31111 56.00
Open type, Cat. No. 31110 33.00



- Instantaneous response without overshoot
- Easy-to-read 5" linear LED scale follows input changes
- Analog output for or up to 50 controller modules
- New Ana-Led III Model 7528 has 50 LED wide-bar display for improved readability

The ANA-LED is the first true solid-state analog panel meter. A row of LED bars display an analog signal in clear, easy-to-see readouts. Separate indicators show reverse polarity, overrange and power "on" or zero.

This compact device is virtually immune to vibration and shock. Ideal for use in general testing and in-process equipment, as well as medical electronic instruments, and trend monitors.

The ANA-LED provides signals to operate remotely mounted setpoint modules used in control applications. One ANA-LED meter can be used with up to 25 setpoint modules. Two power supplies are available. The open type OEM version is a device without a case or fuse. The enclosed version provides screw terminals, fuse and housing for mounting directly on the back of the ANA-LED.

In addition to a wide choice of standard stock ranges listed below, custom ranges, vertical scales, expanded scales, linear display of non-linear signals, non-linear display of linear signals and other special designs are available.

50-BAR DISPLAY MODELS $\pm 2.0\%$ resolution

Model 7527, for thru-panel mounting \$129.00

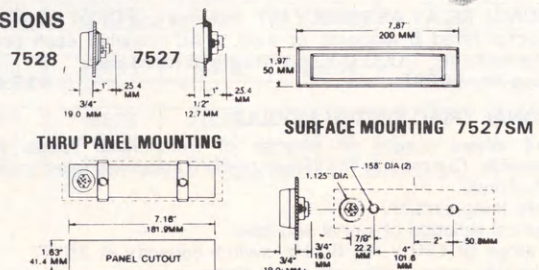
Model 7527SM, for surface mounting 129.00

NEW ANA-LED III, 50 LED wide-bar display

Model 7528, for thru-panel mounting 129.00

STOCK RANGES	Catalog Number		
	Thru-Panel Mounting		Surface Mounting
	Model 7527	Model 7528	Model 7527SM
DC Volts			
0-1	30162	31093	30187
0-10	30163	31094	30188
0-50	—	—	—
0-100	30164	31095	30189
0-150	30165	31096	30190
0-250	30166	31097	30191
DC Millivolts			
0-50	30154	31090	30179
50-0-50	30155	31091	30180
0-100	30156	31092	30181
DC Milliamperes			
0-1	30157	31085	30182
0-5	30158	31086	30183
0-10	30159	31087	30184
0-20	30160	31088	30185
0-50	30161	31089	30186
DC Microamperes			
0-1	30150	31081	30175
0-10	30151	31082	30176
0-50	30152	31083	30177
0-100	30153	31084	30178
AC Volts			
0-1	30170	31098	30195
0-10	30171	31099	30196
0-100	30172	31100	30197
0-150	30173	31101	30198
0-250	30174	31102	30199
AC Millivolts			
0-50	30167	—	30192
50-0-50	30168	—	30193
0-100	30169	—	30194

DIMENSIONS



—Prices are Suggested and Subject to Change Without Notice—

Simpson® Solid-State Non-Indicating Controllers

MODEL 5850

- For precision on-off control with voltage, current and temperature inputs
- Accuracy typically $\pm 1\%$ of full scale
- Rugged sealed, all-metal housing for resistance to moisture and dust
- "On-Off" control, or limit alarm with manual reset
- Solid-state circuitry with 10 amp 120 V AC relay output
- Single or double setpoints available
- Double setpoints overlap; adjustable over 100% of scale
- Setpoint locks are standard
- Remote deviation meter output for $\pm 10\%$ F.S.

AVAILABLE OPTIONS—ask for quotation:

- Time proportioning
- Special ranges
- Hysteresis, non-standard
- Low limit setpoint
- Down scale T/C break protection

RANGES: SSP = single setpoint DSP = double setpoint

Catalog numbers shown in Black are stock; **Orange numbers are to order.**

TEMPERATURE

Range in °F	Sensor	Ext. Resis.	SSP		DSP	
			Cat. No.	Price	Cat. No.	Price
-25 to 50	Thermistor	—	31000			
0-150			31001		31055	
100-250			31002		31056	
0-400	I/C Type J	0-100 Ω	31003	\$140.40	31050	\$240.75
0-800			31004		31051	
0-1200			31005		31052	
0-1600	C/A Type K		31006		31053	
0-2200			31007		31054	

CURRENT 50 mV DC voltage drop

Range	SSP Cat. No.	Price	DSP Cat. No.	Price
0-1 DC μ A	31020	\$140.40	—	\$240.75
0-10 DC μ A	31021		—	
0-50 DC μ A	31022		—	
0-100 DC μ A	31023		—	
0-1 DC mA	31024		31058	
0-5 DC mA	31025		—	
0-20 DC mA	31026		—	
0-50 DC mA	31027		—	
14-20 DC mA	31028		31059	
**5 AC A	31029		—	

† Supplied with 0-100% scale ** Supplied with 0-150% scale

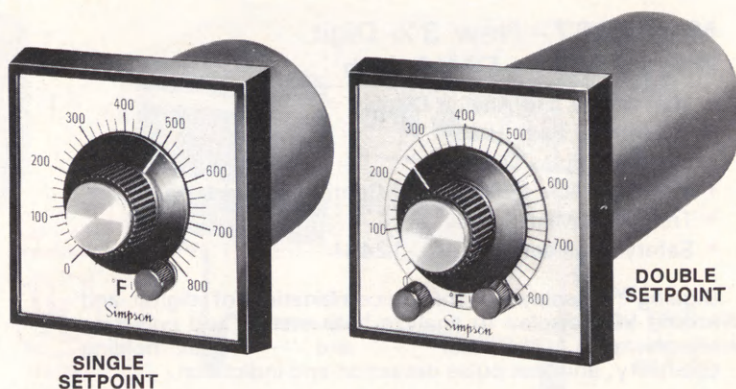
VOLTAGE (For inputs above 150 V AC, use step-down transformer)

Range	Input Resis.	SSP		DSP	
		Cat. No.	Price	Cat. No.	Price
0-10 DC mV	200 Ω	31035	\$140.40	—	\$240.75
0-50 DC mV	1 K Ω	31036		31060	
0-100 DC mV	2 K Ω	31037		—	
0-1 DC V	20 K Ω	31038		—	
0-10 DC V	200 K Ω	31039		—	
0-100 DC V	2 M Ω	31040		—	
11-5 DC V	100 K Ω	31041		—	
0-10 AC V	85 K Ω min.	31042		—	
0-150 AC V	1.3 M Ω min.	31008		31061	

† Supplied with 0-100% scale

DUAL RANGE DSP

0-5 AC A and 0-150 AC V, (0-150% and 0-300 V AC scale), Catalog No. **31062** \$253.90



SPECIFICATIONS

Setpoint: Linear potentiometer with 3.8" scale

Accuracy: Typically $\pm 1\%$ of full scale

Control Mode: On-off standard with $\frac{1}{2}\%$ F.S. differential (time prop. available)

Output: Relay rated 10 amps @ 120 V AC resistive

Input Signal: Voltage, current, thermocouple and thermistor

Line Supply: 120 V AC 50-60 Hz 3 VA standard (field convertible to 240 V AC)

Indication: Output for 500-0-500 DC microamp deviation meter

Ambient Temperature Range: 5°C to 55°C

Cold Junction Compensation: Standard all T/C ranges

T/C Break Protection: Standard all T/C ranges

Weight: SSP 1 $\frac{1}{4}$ lbs., DSP 2 lbs.

ACCESSORIES

Input Transformer: 0-150, 300, 600 V AC primary;

150 V AC secondary, Cat. No. 31070 \$24.75

Current transformers listed on page 59.

Adapter for DIN cutout, Catalog No. 31080 15.00

THERMOCOUPLES ⁽¹⁾

Cat. No.	Type ⁽³⁾	Length	Description	Price
31071	I/C	120"	Duplex T/C wire, welded	\$24.75
31072	C/A	120"	Junction, terminal lugs	32.85
31073	I/C	120"	.187 dia. x 5" long SS sheath	26.40
31074	C/A	120"	Terminal lugs	37.80
31075	I/C	96"	Bayonet type adjustable T/C for plastics machinery	39.00

THERMOCOUPLE ACCESSORIES

	Description	Price
21237	.187 compression fitting (use with 31073 and 31074)	12.00
31076	Bayonet adapter 1/8-27 NPT x 7/8" long (use with 31075)	5.55

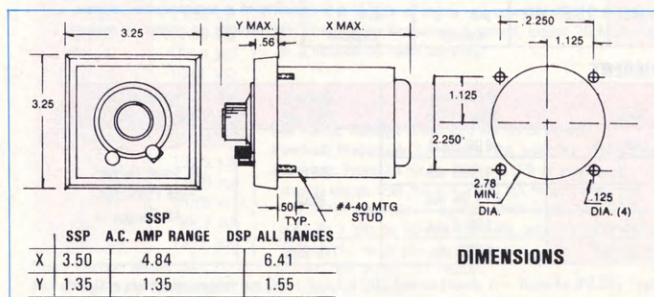
THERMISTORS ⁽²⁾

31077	Free air probe, perforated guard	25.65
31078	General purpose probe	22.05
31079	Surface probe, flat mounting	22.05

NOTES (1) All thermocouples are #20 duplex wire with stainless overbraid and terminal lugs

(2) All thermistors are 15 ft. long with terminal lugs

(3) I/C = Iron Constantan, C/A = Chromel Alumel



Simpson® True RMS DMM

Model 467—New 3½ Digit Hand Portable DMM with:

- LCD Digital and Analog Display
- Differential Peak Hold
- 50 μ Sec. Pulse Detection
- Visual/Audible Indication of Continuity and Logic Level
- True RMS Measurements
- Safety Engineered per UL-1244!

Digalog™ Display—a unique combination of digital and analog LCD display to analyze both steady and pulsating signals, plus differential “+” and “-” peak holding capability, and fast pulse detection and indication.

Model 467 in Blue Case, complete with 9 V battery, test leads with screw-on alligator clips and instruction manual. Cat. No. 12551 \$257.00

Model 467B in Black Case, complete with 9 V battery, test leads with screw-on alligator clips and instruction manual. Cat. No. 12552 \$257.00

ACCESSORIES

Temperature Probe, Catalog No. 00758 \$115.75
 RF Probe, Catalog No. 00748 39.75
 40 KV High-Voltage Probe, Catalog No. 00749 49.25
 AC Amp-Clamp Adapter Model 153-2, Catalog No. 12494 (pg. 44) 48.25
 Extra Test Leads with screw-on alligator clips, Catalog No. 00043 9.00
 Carrying Case, Catalog No. 00813 25.50

DC VOLTS

RANGE	MAXIMUM INDICATION	Input Resistance: 10 M Ω on all ranges Overload Protected to: 1000 V (DC + Peak AC) all ranges Accuracy: $\pm$ (0.1% of input + 1 count) Sensitivity: 100 μ V on 200 mV range Full Range Step Response: 1 second Normal Mode Rejection: 50 dB minimum @ 50/60 Hz Common Mode Rejection: 120 dB minimum @ 50/60 Hz and DC with 1 K Ω unbalance
200 mV	$\pm$ 199.9 mV	
2 V	$\pm$ 1.999 V	
20 V	$\pm$ 19.99 V	
200 V	$\pm$ 199.9 V	
1000 V	$\pm$ 1000 V (Max. Input)	

AC VOLTAGE (TRUE RMS, AC COUPLED)

RANGE	MAXIMUM INDICATION	ACCURACY				
		20 Hz to 40 Hz	40 Hz to 1 KHz	1 KHz to 5 KHz	5 KHz to 20 KHz	20 KHz to 100 KHz
200 mV	199.9 mV	$\pm$ (1.5% of Input + 5 Counts)	$\pm$ (0.5% of Input + 5 Counts)	$\pm$ (5.0% of Input + 5 Counts)	*	*
2 V	1.999 V					
20 V	19.99 V					
200 V	199.9 V					
750 V	750 V (Max. Input)		to 400 Hz only	Not Specified		

Crest Factor (at full scale): 3:1 min. *Typical Extended Frequency Response

Full Range Step Response (to rated accuracy): 3 seconds

Input Impedance: 10 M Ω , <100 pF

Overload Protection: 1000V (DC + peak AC or 750 V RMS, not to exceed a Volt-Hertz product of 10⁷)

RESISTANCE

RANGE	MAXIMUM INDICATION	ACCURACY	OPEN-CIRCUIT VOLTAGE*	Short Circuit Test Current: 2 mA maximum Overload Protected to: 750 V (DC + Peak AC) on all ranges. Full Range Step Response: 1 second except 20 M Ω range which is 7 seconds Diode Test: Diode symbol indicated on 2 K Ω range. Measures forward drop of a semiconductor junction, in millivolts, at approx. ½ milliamp.
200 Ω	199.9 Ω	$\pm$ (0.25% of Input + 1 Count)	2.4 V	
2 K Ω	1.999 K Ω		2.4 V	
20 K Ω	19.99 K Ω		.45 V	
200 K Ω	199.9 K Ω		.45 V	
2000 K Ω	1999 K Ω	$\pm$ (1.0% of Input + 1 Count)	.45 V	
20 M Ω	19.99 M Ω		2.4 V *typical	

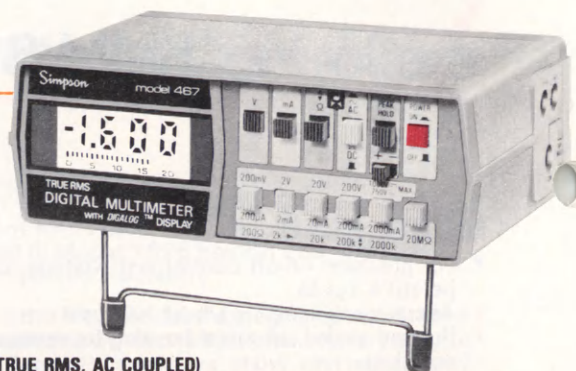
DC CURRENT

RANGE	MAXIMUM INDICATION	BURDEN VOLTAGE	OVERLOAD PROTECTED TO
200 μ A	$\pm$ 199.9 μ A	0.25 V Max.	2 Amps Double Fuse Protected All Ranges
2 mA	$\pm$ 1.999 mA		
20 mA	$\pm$ 19.99 mA		
200 mA	$\pm$ 199.9 mA	1 V Max.	
2000 mA	$\pm$ 1999 mA		

Accuracy: $\pm$ (0.5% of input + 1 count) except 200 mA and 2000 mA ranges which are $\pm$ (0.75% of input + 1 count)

Full Range Step Response (to rated accuracy): 1 second

Overload Protection: 2A/250 V fuse and 3A/600 V fuse in series



AC CURRENT (TRUE RMS, AC COUPLED)

RANGE	MAXIMUM INDICATION	ACCURACY		BURDEN VOLTAGE	OVERLOAD PROTECTED TO	
		20 Hz to 40 Hz	40 Hz to 1 KHz			
200 μ A	199.9 μ A	$\pm$ (2.0% of Input + 5 Counts)	$\pm$ (1.5% of Input + 5 Counts)	0.25 V Max.	2 Amps Double Fuse Protected All Ranges	
2 mA	1.999 mA					
20 mA	19.99 mA			1 V Max.		
200 mA	199.9 mA					
2000 mA	1999 mA					

Crest Factor (at full scale): 3:1 minimum

Full Range Step Response (to rated accuracy): 3 seconds

Overload Protection: 2A/250 V fuse and 3A/600 V fuse in series

SPECIFICATIONS (for an operating temperature of +18°C to +28°C at relative humidity up to 90% unless otherwise noted)

BAR GRAPH:

Sensitivity: 10 mV on 200 mV range. Accuracy: $\pm$ (5% of input + 1 segment).

Maximum Indication: 110% of range limited to max. input. Maximum Frequency to Perceive Change in Bargraph: 10Hz. Full Range Step Response (to rated accuracy): 150 msec.

DIFFERENTIAL PEAK HOLD:

DC VOLTS AND DC CURRENT: Peak Hold Accuracy DVC: $\pm$ (1% of input + 10 counts) DC; $\pm$ (1.5% of input + 10 counts). Acquisition Time: 10 mS minimum duration for square pulses. Display Decay Rate: 1 digit/sec

AC VOLTS AND AC CURRENT (100 Hz to 1 KHz): Peak Hold Accuracy: $\pm$ (3% of input + 10 counts). Acquisition Time: 200 mS minimum

PULSE DETECTION:

Reference Level: Approx. $\pm$ 0.4 V. Display: “▲” for absolute values greater than reference. “▼” for absolute values less than reference (85 dB audio tone switch selectable coincident with “▼” switch selectable). Pulse Response: 50 μ S (minimum width of a 0 to $\pm$ 1 V pulse required to turn on display “▲”). Pulse stretcher holds display for approx. 100 mS when narrow pulses are detected). Input Impedance: 100 K Ω in parallel with <100 PF. Overload Protection: 750 V (DC + peak AC)

CONTINUITY:

Display: “▲” open circuit. “▼” continuity (with switch selectable tone). Response Time: 50 μ S (minimum duration of continuity or open to turn on display or audio tone). Pulse stretcher holds display and tone for approx. 100 mS. Overload Protection: 750 V (DC + peak AC) all ranges.

RATED CIRCUIT-TO-GROUND VOLTAGE (maximum common mode voltage):

1000 V (DC + peak AC). Maximum from “common” terminal to power line ground (earth).

TRANSIENT PROTECTION: Protected against transients on all voltage and resistance ranges: 6 KV @ 100 μ S.

DISPLAY

Numerical Display: 3½ digit, 7 segment, 0.4” LCD. Bar Graph: LCD 20 segment bar graph with 2 segment overrange. Absolute-value indication. Left-hand zero. (22 segments total)

CONVERSION RATE:

Numerical Display: 3 readings per second, nominal. Bar Graph: 60 readings per second, nominal. DC Polarity Selection: Automatic “-” indicated, “+” implied.

POWER REQUIREMENTS:

Battery Life: 200 hours continuous with alkaline battery (DC volts and DC current modes only). Battery Type: (1) 9-volt “transistor” battery alkaline (NEDA 1604A). Low Battery Indicator: Automatically displays “B” to signify approx. 20 hours of battery life remaining.

TEMPERATURE RANGE:

Operating: 0° to +55°C. Storage: -40°C to +60°C

TEMPERATURE COEFFICIENT: (0°C to +18°C and +28°C to +55°C). Less than 0.1 times the applicable accuracy specification per °C.

RELATIVE HUMIDITY: Operating: 90% maximum up to +35°C; 70% maximum up to +55°C (non-condensing)

DIMENSIONS: 2 x 5.63 x 4.6” (50.8 x 143 x 116.8 mm)

WEIGHT: 1 lb. 5 ozs. (595 Kg)

Simpson® New Compact Portable DMMs



New Average Sensing Model 461-2



New TRUE RMS Sensing Model 461-2R



New Compact Portable Model 461-2 and 461-2R DMMs

- Both Models 461-2 and 461-2R have increased basic accuracy of 0.1% DC
- AC voltage measurement capability up to 750 V
- Overload protection up to 250 V on resistance measurements
- High voltage transient protection (6 kV, 100 μ s)
- Extended AC voltage frequency response. 20 Hz to 10 kHz on Model 461-2, up to 50 kHz on Model 461-2R

Model 461-2R True RMS Sensing, complete with nickel-cadmium batteries, battery charger/adaptor, color coded test leads with alligator clip adapters, and operator's manual.

For 120 V AC, Catalog No. 12531.....\$234.00

For 220 V AC, Catalog No. 12532.....234.00

Model 461-2, Average Sensing, complete with nickel-cadmium batteries, battery charger, adaptor, color coded test leads with alligator clip adapters, and operator's manual.

For 120 V AC, Catalog No. 12528.....\$194.00

For 220 V AC, Catalog No. 12529.....194.00

ACCESSORIES

Temperature Probe, Catalog No. 00758.....\$115.75

RF Probe, Catalog No. 00748.....39.75

40 kV High-Voltage Probe, Catalog No. 00749.....49.25

AC Amp-Clamp Adapter, Model 153-2, Catalog No. 12494 (pg. 44) 48.25

Carrying Case, Catalog No. 00814.....27.00

Extra 120 V AC Adapter, Catalog No. 00743.....9.25

Extra 230 V AC Adapter, Catalog No. 00746.....9.25

Extra Test Leads, Catalog No. 00043.....9.00

Batteries, Catalog No. 00044.....(Pkg. of 2 (4 Cells), 20.75

SPECIFICATIONS

RATED CIRCUIT-TO-GROUND VOLTAGE (maximum common mode voltage): 300 volts (DC plus peak AC) maximum

TRANSIENT PROTECTION: Protected against transients on all voltage ranges, 6 kV @ 100 μ sec

DISPLAY:

Numerical Display: 3½ digit, 7 segment, .3" light emitting diode (LED) type display

Conversion Rate: 3 readings per second, nominal

DC Polarity Selection: Automatic "-" indication, "+" implied

POWER REQUIREMENT:

Battery Charging (AC Operation): 120 V AC $\pm$ 10% or 230 V AC $\pm$ 15% 50-400 Hz, 3 V A nominal

Battery Operation: Two batteries consisting of four nickel-cadmium "AF" size rechargeable cells included

Battery Operation Time: 8 hours, nominal

Battery Recharge Time: 12 hours, nominal

TEMPERATURE RANGE: Operating: 0°C to +55°C, Storage: -40°C to +60°C

RELATIVE HUMIDITY: 0 to 90% (non-condensing)

TEMPERATURE COEFFICIENT: (0°C to +18°C and 28°C to +55°C) Less than 0.1 times the applicable accuracy specification per °C

DIMENSIONS: Height: 2" (50.8 mm), Width: 5.63" (143 mm), Depth: 4.6" (116.8 mm)

WEIGHT: only 1.5 lb. (.595 kg), complete with cadmium batteries

- Reduced component count and optimal design provide for greater reliability
- True RMS reading Model 461-2R affords accurate measurements of complex AC waveforms
- Complete with nickel cadmium rechargeable batteries, AC charger/adaptor, safety engineered test leads, and instruction manual

RANGES

DC VOLTAGE	MAXIMUM INDICATION
200 mV	$\pm$ 199.9 mV
2 V	$\pm$ 1.999 V
20 V	$\pm$ 19.99 V
200 V	$\pm$ 199.9 V
1000 V	$\pm$ 1000 V

Input Resistance: 10 M Ω , all ranges
Overload Protected to: 1000 V (DC + peak AC), all ranges
Accuracy: $\pm$ (0.1% of input + 1 count): +18°C to +28°C
Sensitivity: 100 μ V on 200 mV range
Full Range Step Response: 1 second (to rated accuracy)

Normal Mode Rejection: 55 dB minimum at 60 Hz

Common Mode Rejection: 120 dB minimum at 60 Hz

AC VOLTAGE	MAXIMUM INDICATION	INPUT IMPEDANCE	OVERLOAD PROTECTED TO (DC + peak AC)	
			Model 461-2	Model 461-2R
200 mV	199.9 mV	10 M Ω and 100 pF On All Ranges	750 V	250 V
2 V	1.999 V		750 V	250 V
20 V	19.99 V		1000 V	1000 V
200 V	199.9 V		1000 V	1000 V
750 V	750 V (Max. Input)		1000 V	1000 V

Accuracy: $\pm$ (% of input + No. of counts): +18°C to +28°C

RANGE	20 Hz to 400 Hz	400 Hz to 1 kHz	1 kHz to 10 kHz		10 kHz to 20 kHz to	20 kHz to 50 kHz to
	Model 461-2	Model 461-2R	Model 461-2	Model 461-2R	20 kHz	50 kHz
200 mV	Model 461-2	Model 461-2R	±(5% + 2)	±(5% + 3)	Model 461-2R	
2 V	±(.5% + 2)	±(.5% + 3)			+ (5% + 3)	
20 V				±(1.5% + 3)		
200 V						
750 V	Both models ±(1% + 3)					

Crest Factor, Model 461-2R: 3:1 minimum (full scale), 4:1 typical

Full Range Step Response: 3 seconds (to rated accuracy)

DIRECT CURRENT	MAXIMUM INDICATION
200 μ A	$\pm$ 199.9 μ A
2 mA	$\pm$ 1.999 mA
20 mA	$\pm$ 19.99 mA
200 mA	$\pm$ 199.9 mA
2000 mA	$\pm$ 1999 mA

Full Range Voltage Drop: 200 mV, all ranges
Overload Protected: 2 A double fuse protected on all ranges
Accuracy: $\pm$ (0.5% of input + 2 counts except 200 mA and 2000 mA range which is $\pm$ (0.75% of input + 2 counts): +18°C to +28°C
Full Range Step Response: 1 second (to rated accuracy)

RESISTANCE	MAXIMUM INDICATION
200 Ω	199.9 Ω
2 k Ω	1.999 k Ω
20 k Ω	19.99 k Ω
200 k Ω	199.9 k Ω
2000 k Ω	1999 k Ω
20 M Ω	19.99 M Ω

Open Circuit Voltage: <3 V, all ranges
Overload Protected: to 250 V RMS, all ranges
Accuracy: $\pm$ (0.25% of input + 2 counts) except 20 M Ω which is $\pm$ (0.75% of input + 2 counts): +18°C to +28°C
Full Range Step Response: 1 second, except 20 M Ω which is 3 seconds (to rated accuracy)

ALTERNATING CURRENT	MAXIMUM INDICATION
200 μ A	199.9 μ A
2 mA	1.999 mA
20 mA	19.99 mA
200 mA	199.9 mA
2000 mA	1999 mA

Full Range Voltage Drop: 200 mV on all ranges
Overload Protected: 2 A double fuse protection on all ranges
Accuracy: From 20 Hz to 1 kHz: $\pm$ (1% of input + 2 counts) except 200 mA and 2000 mA ranges which are $\pm$ (1.5% of input plus 2 counts). From 1 kHz to 10 kHz (461-2): 1 kHz to 50 kHz (461-2R), accuracy same as for 200 mV AC range plus an additional $\pm$ 1.0% of input.

Crest Factor, Model 461-2R: 3:1 minimum (full scale), 4:1 typical

Full Range Step Response: 3 seconds (to rated accuracy)

Simpson® Digital Multimeter Family



- Automatically selects the range and positions the decimal point on voltage and resistance measurements
- Pushbutton function and manual-range selection
- 0.25% accuracy on DC voltage ranges
- A/D converter on single LSI chip
- Automatic polarity; bright 0.3" LEDs
- Recessed, insulated jacks on test leads
- Operates 8 hours on a single charge. May be operated from AC line while charging
- Measures:
 - DC voltage from 100 μ V to 1,000 V
 - AC voltage from 100 μ V to 600 V
 - Resistance from 1.0 Ω to 20 M Ω
 - Direct current from 1 μ A to 1,999 mA
 - Alternating current from 1 μ A to 1,999 mA
- High-impact molded case with folding stand
- 120 V Model is UL listed • One-year warranty

Our popular autoranging DMM. Meets UL 1244 standards and ANSI C39.5 requirements.

Model 462 complete with nickel-cadmium batteries, 120 V AC (50-500 Hz) battery charger/adaptor, color coded test leads, alligator clip adapters, operator's manual, Catalog No. 12527 **\$244.00**

Model 462 as above, but for 230 V AC operation, Catalog No. 12548 **244.00**

ACCESSORIES

Temperature Probe, Catalog No. 00758 **115.75**

RF Probe, Catalog No. 00748 **39.75**

40-KV DC Probe, Catalog No. 00749 **49.25**

AC Amp-Clamp Adapter, Model 153-2, Catalog No. 12494 (pg. 44) **48.25**

Deluxe Carrying Case, Catalog No. 00747 **29.50**

Extra Test Leads, Catalog No. 00043 **9.00**

Extra 120 V AC Adapter, Catalog No. 00743 **9.25**

Extra 220 V AC Adapter, Catalog No. 00746 **9.25**

Batteries, Catalog No. 00044 . . . Pkg. of 2 (4 Cells), **20.75**

SPECIFICATIONS

Rated Circuit-to-Ground Voltage: (Maximum Common Mode Voltage): 300 volts (DC plus peak AC) maximum from "—" or common terminal to powerline (earth) ground

Resolution: 1 part in 2000

Numerical Display: 3-1/2 digit, 7-segment light emitting diode (LED) type; display blanks, except for the most significant "1" digit at 2000 counts and above. (An LED will light in the 20 M Ω range.)

Conversion Rate: 3 readings per second, nominal

DC Polarity Selection: Automatic "—" sign displayed

Ranging, Auto: Automatically upranges for readings 2000 and above; downranges for readings below 180 counts

Manual: Switch selection of ranges

Power Requirement: Battery Charging (AC operating): 120 V AC $\pm$ 10%, 50-400 Hz, 3 VA

Battery Operation: Four nickel-cadmium "AF" size rechargeable cells, included

Battery Operation Time: 8 hours, nominal (continuous with fully charged battery)

Battery Recharge Time: 12 hours, nominal

Temperature: Operating: 0°C to +55°C. Storage: -40°C to +60°C

Relative Humidity: 30 to 60%

Atmospheric Pressure: 575 to 800 mm Hg to alt. of 2286 m (7,500 ft.)

Dimensions: 2 x 5.63 x 4.6" (50.8 x 143 x 116.8 mm)

Weight: Approx. 1 lb. 8 oz. (0.68 Kg) with batteries

MODEL 462 AUTORANGING DMM

RANGES

DC VOLTAGE

Range	Auto/Manual	Maximum Indication	Overload Protected To	
			Auto	Manual
200 mV	no/yes	$\pm$ 199.9 mV	$\pm$ 1000 V	$\pm$ 650 V
2 V	yes/yes	$\pm$ 1.999 V	$\pm$ 1000 V	$\pm$ 650 V
20 V	yes/yes	$\pm$ 19.99 V	$\pm$ 1000 V	$\pm$ 1000 V
200 V	yes/yes	$\pm$ 199.9 V	$\pm$ 1000 V	$\pm$ 1000 V
1000 V	yes/yes	$\pm$ 1000 V (max. input)	$\pm$ 1000 V	$\pm$ 1000 V

Input Resistance: 10 M Ω

Accuracy:** $\pm$ (0.25% + 1 digit)

Full Range Sensitivity: 100 μ V on 200 mV range

Full Range Step Response (to rated accuracy): 3 seconds

Normal Mode Rejection: 40 dB minimum at 60 Hz

Common Mode Rejection: 120 dB minimum at 670 Hz

Temperature Coefficient: $\pm$ (0.025% of reading + 0.1 digit)/°C (from 0°C to +55°C)

AC VOLTAGE: (Average-sensing, rms calibrated sine wave)

Range	Auto/Manual	Maximum Indication	Overload Protected To	
			Auto	Manual
200 mV	no/yes	199.9 mV	600 V rms	240 V rms
2 V	yes/yes	1.999 V	600 V rms	240 V rms
20 V	yes/yes	19.99 V	600 V rms	600 V rms
200 V	yes/yes	199.9 V	600 V rms	600 V rms
600 V*	yes/yes	600 V (max. input)	600 V rms	600 V rms

*50-400 Hz

Input Impedance: 9 M Ω and 100 pF

Accuracy:** $\pm$ (0.75% + 2 digits†)

50 Hz to 1000 Hz; $\pm$ (5.0% + 2 digits†) 1000 Hz to 5 KHz except 600 V range

† + 5 digits on 200 mV range

RESISTANCE: (Auto or manual range selection)

Range	Maximum Indication	Test Current	Overload Protected To
2 K Ω	1.999 K Ω	1 mA	250 V rms*
20 K Ω	19.99 K Ω	100 μ A	250 V rms*
200 K Ω	199.9 K Ω	10 μ A	250 V rms*
2000 K Ω	1999 K Ω	1 μ A	250 V rms
20 M Ω	19.99 M Ω	100 nA	250 V rms

*5 seconds or less; 135 V rms continuous

Accuracy:** $\pm$ (0.5% + 1 digit) except on the 20 M Ω range, which is $\pm$ (1.0% + 1 digit)

Sensitivity: 1.0 Ω on 2 K Ω range

Full Range Step Response (to rated accuracy): 7 seconds

Full Scale Voltage: 2 volts

Temperature Coefficient: $\pm$ (0.05% of reading + 0.1 digit)/°C (from 0°C to +55°C)

DC CURRENT: (Manual range selection only)

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
2 mA	$\pm$ 1.999 mA	200 mV	$\pm$ 2.0 A*
20 mA	$\pm$ 19.99 mA	200 mV	$\pm$ 2.0 A*
200 mA	$\pm$ 199.9 mA	200 mV	$\pm$ 2.0 A*
2000 mA	$\pm$ 1999 mA	200 mV	$\pm$ 2.0 A*

*Fuse protected

Accuracy:** $\pm$ (1.0% + 1 digit) except on 2000 mA which is $\pm$ (1.5% + 1 digit)

Sensitivity: 1 μ A on 2 mA range

Full Range Step Response (to rated accuracy): 1 second

Temperature Coefficient: $\pm$ (0.05% of reading + 0.1 digit)/°C (from 0°C to +55°C)

AC CURRENT: (50 KHz to 1 KHz) (Manual range selection only)

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
2 mA	1.99 mA	200 mV	2.0 A*
20 mA	19.99 mA	200 mV	2.0 A*
200 mA	199.9 mA	200 mV	2.0 A*
2000 mA	1999 mA	200 mV	2.0 A*

*Fuse protected

Accuracy:** $\pm$ (1.5% + 5 digits), except on 2000 mA which is $\pm$ (2% + 5 digits)

Full Range Step Response (to rated accuracy): 5 seconds

Temperature Coefficient: $\pm$ (0.1% of reading + 2 digit)/°C (from 0°C to +55°C)

**% of reading, 23°C $\pm$ 5°C

Simpson® Compact LCD Digital Multimeter

- High contrast 1/2" 7-segment 3 1/2-digit liquid crystal display. Easy viewing in daylight or roomlight
- Up to 200-hour continuous battery operation on a 9 V alkaline "transistor" battery. No power cord or charger needed. Automatic warning indicator
- Exceptional 0.1% accuracy on DC voltage ranges
- Transient suppression and overload protection plus all LSI circuitry for extreme reliability
- 26 AC/DC voltage, current and resistance ranges
- Convenient pushbutton range and function selection plus automatic polarity and zeroing
- Compact 2 x 5.63 x 4.6". Weighs 1 lb.
- UL listed
- One-year warranty

Our popular compact LCD model meets UL 1244 standards and ANSI C39.5 requirements

Model 463 Digital Multimeter with 9 V battery, test leads with screw-on alligator clips, and instruction manual, Catalog No. 12649 **\$200.00**

ACCESSORIES

Temperature Probe, Catalog No. 00758 **115.75**
RF Probe, Catalog No. 00748 **39.75**
40 KV High-Voltage Probe, Catalog No. 00749 **49.25**
AC Amp-Clamp Adapter Model 153-2,
 Catalog No. 12494 (page 44) **48.25**
Extra Test Leads with screw-on alligator clips,
 Catalog No. 00043 **9.00**
Carrying Case, Catalog No. 00813 **25.50**

SPECIFICATIONS

Rated Circuit-to-Ground Voltage: (max. common mode voltage): 1000 volts (DC plus peak AC) from any measuring terminal to power line (earth) ground terminal

Transient Protection: Protected on all voltage and resistance ranges: 10 KV for 1 μ S max., 6 KV for 100 μ S max.

Normal Mode Rejection: 50 dB minimum at 60 Hz

Common Mode Rejection: 120 dB minimum at 60 Hz

Numerical Display: 3 1/2-digit, 7-segment liquid crystal display (LCD) type, with "low battery" indication

Conversion Rate: 3 readings per second, nominal

DC Polarity Section: Automatic "--" indication

Battery Type: One 9-volt "transistor" battery, alkaline (NEDA 1604A) or carbon-zinc (NEDA 1604)

Battery Life: 200 hours with alkaline battery

Operating Temperature: 0° to +50°C

Dimensions: 2 x 5.63 x 4.6" (50.8 x 143 x 116.8 mm)

Weight: 2 lb. 2 oz. (1.474 Kg) with battery

MODEL 463 Digital Multimeter



RANGES

DC VOLTAGE

Range
200 mV
2 V
20 V
200 V
1000 V

Accuracy*: $\pm(0.1\% + 1 \text{ digit})$
Input Resistance: 10 M
Overload Protection: to $\pm 1100 \text{ V}$
 (DC plus peak AC)

AC VOLTAGE Accuracy* (% of reading plus number of digits)

Range	20 Hz to 40 Hz	40 Hz to 400 Hz	400 Hz to 1 KHz	1 KHz to 10 KHz	10 KHz to 20 KHz
200 mV		$\pm(0.5\%)$		$\pm(1.5\%)$	$\pm(5\%)$
2 V	$\pm(1.5\%)$	+2		+3	+5
20 V	+3				
200 V					
750 V					

RESISTANCE

Range	Accuracy* $\pm$	Open Circuit Voltage
200 Ω	$\pm(0.25\%)$	<3.5 V all ranges. Overload protected: to 250 V rms, all ranges
2 K Ω	$\pm(0.25\%)$	
20 K Ω	$\pm(0.25\%)$	
200 K Ω	$\pm(0.25\%)$	
2 M Ω	$\pm(0.25\%)$	
20 M Ω	$\pm(0.75\%)$	

AC CURRENT (40 Hz to 5 KHz)

Range	Accuracy* (from +20°C to +30°C): $\pm(1.5\% + 3 \text{ digits})$ 40 Hz to 1 KHz $\pm(5\% + 5 \text{ digits})$ 1 KHz to 5 KHz
200 μ A	Full Range Voltage Drop: 200 mV, all ranges Overload Protected: to $\pm 2 \text{ A}$ fuse protected, all ranges
2 mA	
20 mA	
200 mA	
2000 mA	

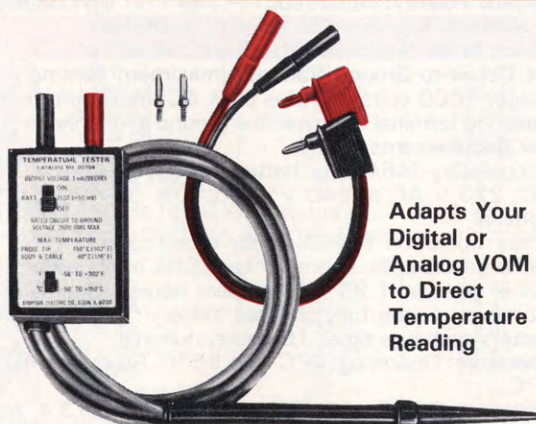
DC CURRENT

Range	Accuracy* (from +20°C to +30°C): $\pm(0.5\% + 2 \text{ digits})$ except on 2000 mA range which is $\pm(1.0\% + 2 \text{ digits})$
200 μ A	Full Range Voltage Drop: 200 mV all ranges Overload Protected: to $\pm 2 \text{ A}$ fuse protected, all ranges
2 mA	
20 mA	
200 mA	
2000 mA	

*% of reading, +20°C to +30°C

$\pm$ % of reading + 2 digits

Simpson® Temperature Probe Tester-Adapter



Adapts Your Digital or Analog VOM to Direct Temperature Reading

Two ranges: -50° to +150°C and -58° to +302°F. VOM's millivolt range reads degrees (-25.1 mV equals -25.1°). Insulated probe lets you measure temperature in "live" circuits. 750-hour battery with test feature. With 9 V battery, adapters for banana jack input or Simpson insulated female inputs, Catalog No. 00758 . . . **\$115.75**
Replacement Lead Set, Cat. No. 00054 **8.75**

SPECIFICATIONS

Ranges: -50° to +150°C, -58° to +302°F

Power: 9 V alkaline battery (NEDA 1604 A or equiv.)

Output: One mV DC per degree C or F (5000 Ω min.)

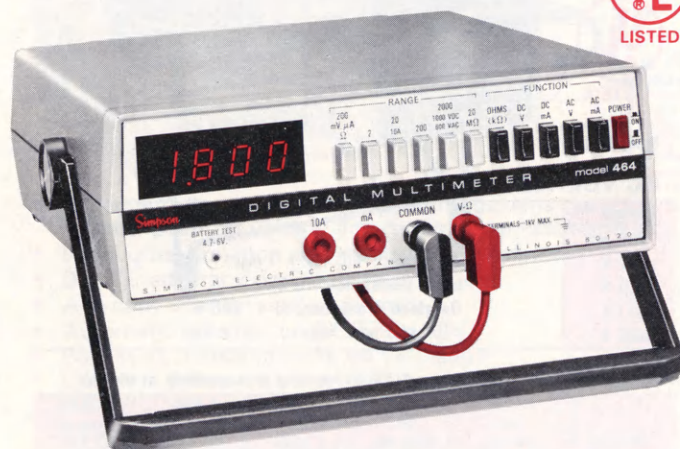
Accuracy: (+15°C to +35°C ambient) $\pm 2^\circ$ (probe tip temp.), 0° to 100°C, derated linearly to +4° at -50°C and +150°C

Response: 1.5 sec to within 2° (50°C step)

Maximum Rated Circuit-to-Ground Voltage: 350 V peak from probe tip to circuit common or earth ground

Simpson® Digital Multimeter Family

120 V AC
Models are



MODEL 464-3

High-Performance, Low-Price
With 0.1% DC V Accuracy

- Reliable bi-polar LSI design with automatic zeroing and polarity
- Pushbutton selected functions and 28 ranges up to 1000 V DC, 600 V AC, 20 MΩ, 10 A
- $\pm 0.1\%$ DC V accuracy
- Choice of AC line and rechargeable battery operation or AC line operation only
- High-impact case and tilt-view adjustable handle
- 120 V models are UL listed
- One-year warranty

For lab, production testing, service and maintenance where a high-quality instrument is needed but budgets are limited. LSI circuitry for stability and reliability. Meets the new UL 1244 standard for safety of electrical and electronic measuring and testing equipment, and ANSI C39.5 specifications. Choice of AC line power models for low cost or AC/battery power models for greater flexibility. Modern impact-resistant case, tilt-view handle. Color-coded test leads with screw-on alligator clips, detachable AC line cord and manual.

Model 464A-3 Digital Multimeter for AC line operation

For 120 V, Catalog No. 12657 \$290.00
For 220 V, Catalog No. 12658 290.00
For 240 V, Catalog No. 12659 290.00

Model 464D-3 for AC line and rechargeable battery operation

Batteries not included
For 120 V, Catalog No. 12661 \$338.00
For 220 V, Catalog No. 12662 338.00
For 240 V, Catalog No. 12663 338.00

ACCESSORIES

Temperature Probe, Cat. No. 00758 .. \$115.75
RF Probe, Cat. No. 00748 39.75
40 kV High Voltage Probe, No. 00749 .. 49.25
Model 154-2 Amp-Clamp Adapter,
Cat. No. 12495 (pg. 44) 48.25
Carrying Case, Cat. No. 01617 40.25
Extra Test Leads, Cat. No. 00043 9.00



Model 154-2

SPECIFICATIONS

Resolution (smallest indicated unit of change): AC/DC voltage 100 μ V, AC/DC current 100 nA, resistance 0.1 Ω
Numerical Display: 3½ digits, 7 segment, 0.43" LED
Conversion Rate: 3 readings per second
Overrange Indication: All digits flash beyond 1999 counts

Automatic Polarity: Automatic "+" or "-" sign displayed

Normal Mode Rejection: 55 dB min. at 60 Hz

Common Mode Rejection: 90 dB min. at 60 Hz

Rated Circuit-to-Ground Voltage: (maximum common mode voltage) 1000 volts (DC plus peak AC) maximum from any measuring terminal to power line ground and/or earth ground

Power Requirements:

AC operating (464A) or battery charging (464D): 120 V AC, 220 V AC or 240 V AC $\pm 10\%$ 50-400 Hz, 5 VA nominal

Battery operation (464D): Four nickel-cadmium "D" size rechargeable cells. Eveready type CH4 or equivalent (each cell is rated at 1.25 V, 4-ampere hours). Operation time (continuous with fully charged battery): 8 hours nominal. Battery recharge time: 16 hours, nominal.

Temperature: Operating: 0°C to +55°C. Storage: -40°C to 60°C

Dimensions: 2.70" (68.6 mm) x 8.40" (213.4 mm) x 9.00" (228.6 mm)

Weight: Approximately 3 lbs. (1.36 Kg) without batteries

RANGES

DC VOLTAGE Accuracy*: $\pm (0.1\% + 1 \text{ digit})$

Range	Maximum Indication	Input Resistance	Overload Protected To
200 mV	$\pm 199.9 \text{ mV}$	10 MΩ all ranges	$\pm 1000 \text{ V}$ all ranges
2 V	$\pm 1.999 \text{ V}$		
20 V	$\pm 19.99 \text{ V}$		
200 V	$\pm 199.9 \text{ V}$		
1000 V	$\pm 1000 \text{ V (max. input)}$		

AC VOLTAGE (Average-sensing, rms calibrated sine wave 40 Hz to 10 KHz). Accuracy*: $\pm (0.5\% + 2 \text{ digits})$, 40 Hz - 1 KHz, $\pm (1.0\% + 2 \text{ digits})$, 1 KHz - 10 KHz

Range	Maximum Indication	Input Resistance	Overload Protected To
200 mV	199.9 mV	10 MΩ at 100 pF all ranges	600 V rms all ranges
2 V	1.999 V		
20 V	19.99 V		
200 V	199.9 V		
600 V†	600 V (max. input)		

RESISTANCE Accuracy*: $\pm (0.5\% + 1 \text{ digit})$, except $\pm (1.0\% + 1 \text{ digit})$ on 20 MΩ ranges

Range	Maximum Indication	Full Scale Voltage	Test Current	Overload Protected To
200 Ω	199.9 Ω	200 mV	1 mA	250 V rms**
2 KΩ	1.999 KΩ	2 V	1 mA	250 V rms**
20 KΩ	19.99 KΩ	2 V	100 μ A	250 V rms
200 KΩ	199.9 KΩ	200 mV	1 μ A	250 V rms
2000 KΩ	1999 KΩ	2 V	1 μ A	250 V rms
20 MΩ	19.99 MΩ	2 V	100 nA	250 V rms

DC CURRENT Accuracy*: $\pm (0.5\% + 1 \text{ digit})$, except $\pm (1.0\% + 1 \text{ digit})$ on 2000 mA and 10 A ranges

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
200 μ A	$\pm 199.9 \mu\text{A}$	200 mV	$\pm 2.5 \text{ A}^\dagger$
2 mA	$\pm 1.999 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}^\dagger$
20 mA	$\pm 19.99 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}^\dagger$
200 mA	$\pm 199.9 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}^\dagger$
2000 mA	$\pm 1999 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}^\dagger$
10 A	$\pm 10.00 \text{ A (max. input)}$	100 mV	$\pm 10 \text{ A}$

AC CURRENT (40 Hz to 10 KHz) Accuracy*: $\pm (1.5\% + 2 \text{ digits})$, except $\pm (2.0\% + 2 \text{ digits})$ on 2000 mA and 10 A ranges

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
200 μ A	199.9 μ A	200 mV	2.5 A†
2 mA	1.999 mA	200 mV	2.5 A†
20 mA	19.99 mA	200 mV	2.5 A†
200 mA	199.9 mA	200 mV	2.5 A†
2000 mA	1999 mA	200 mV	2.5 A†
10 A	10.00 A (max. input)	100 mV	10 A

* % of reading: +15°C to 35°C

† Frequency range: 40 Hz to 1000 Hz

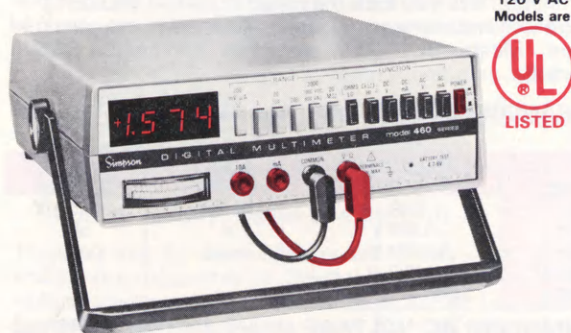
** 5 seconds or less, 135 V continuous

† Fuse protected

Simpson® Digital Multimeter Family

DELUXE MODEL 460-5

with 0.1% DC V Accuracy, Low-Power Ohms and Auxiliary Analog Meter



120 V AC Models are



RANGES

DC VOLTAGE Accuracy*: $\pm(0.1\% + 1 \text{ digit})$

Range	Maximum Indication	Input Impedance	Overload Protection
200 mV	$\pm 199.9 \text{ mV}$	10 M Ω all ranges	$\pm 1000 \text{ V}$ all ranges
2 V	$\pm 1.999 \text{ V}$		
20 V	$\pm 19.99 \text{ V}$		
200 V	$\pm 199.9 \text{ V}$		
1000 V	$\pm 1000 \text{ V (max. input)}$		

AC VOLTAGE (Average-sensing rms calibrated sine wave: 40 Hz to 20 KHz). Accuracy*: $\pm(0.5\% + 2 \text{ digits})$, 40 Hz to 10 KHz, $\pm(1.0\% + 2 \text{ digits})$, 10 KHz to 20 KHz

Range	Maximum Indication	Input Impedance	Overload Protection
200 mV	199.9 mV	10 M Ω , 75 pF all ranges	350 V rms
2 V	1.999 V		350 V rms
20 V	19.99 V		650 V rms
200 V	199.9 V		650 V rms
600 V	600 V (max. input)		650 V rms

Resistance Accuracy*: $\pm(0.25\% + 1 \text{ digit})$, except on 2000 K Ω and 20 M Ω ranges, which are $\pm(0.5\% + 2 \text{ digits})$

LOW-POWER Range	Maximum Indication	Full-Scale Voltage	Test Current	Overload Protected To
200 Ω	199.9 Ω	200 mV All Ranges	1 mA	250 V rms**
2 K Ω	1.999 K Ω		100 μA	250 V rms**
20 K Ω	19.99 K Ω		10 μA	250 V rms
200 K Ω	199.9 K Ω		1 μA	250 V rms
2000 K Ω	1999 K Ω		100 nA	250 V rms

Maximum open-circuit voltage = 1 V

STANDARD Range	Maximum Indication	Full-Scale Voltage	Test Current	Overload Protected To
2 K Ω	1.999 K Ω	2 V All Ranges	1 mA	250 V rms**
20 K Ω	19.99 K Ω		100 μA	250 V rms
200 K Ω	199.9 K Ω		10 μA	250 V rms
2000 K Ω	1999 K Ω		1 μA	250 V rms
20 M Ω	19.99 M Ω		100 nA	250 V rms

**For 5 seconds or less, 135 V continuous

DC CURRENT Accuracy*: $\pm(0.25\% + 1 \text{ digit})$, except on 2000 mA and 10 A ranges, which are $\pm(1.0\% + 1 \text{ digit})$

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
200 μA	$\pm 199.9 \mu\text{A}$	200 mV	$\pm 2.5 \text{ A}$
2 mA	$\pm 1.999 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}$
20 mA	$\pm 19.99 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}$
200 mA	$\pm 199.9 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}$
2000 mA	$\pm 1999 \text{ mA}$	200 mV	$\pm 2.5 \text{ A}$
10 A	$\pm 10.00 \text{ A (max. input)}$	100 mV	$\pm 10 \text{ A}$

AC CURRENT (40 Hz to 10 KHz) Accuracy*: $\pm(0.7\% + 2 \text{ digits})$, except on 2000 mA and 10 A ranges, which are $\pm(1.5\% + 2 \text{ digits})$

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
200 μA	199.9 μA	200 mV	2.5 A†
2 mA	1.999 mA	200 mV	2.5 A†
20 mA	19.99 mA	200 mV	2.5 A†
200 mA	199.9 mA	200 mV	2.5 A†
2000 mA	1999 mA	200 mV	2.5 A†
10 A	10.00 A (max. input)	100 mV	10 A

* % of reading: +15°C to +35°C

† Fuse protected

- 3½ digit 0.43" red LED display
- Special MOS-LSI circuitry for high reliability
- Pushbutton selected functions and 32 ranges up to 1000 V DC, 600 V AC, 10 A, 20 m Ω and low-power ohms
- Automatic zeroing and polarity
- Overload protection on all ranges
- Analog meter for nulling, peaking, scanning trends
- 0.1% DC V accuracy
- Choice of nickel-cadmium battery/AC line operation, or AC line operation only
- High-impact case with adjustable tilt-view handle
- 120 V models are UL listed
- One-year warranty

Simpson's deluxe DMM offers 0.1% accuracy on DC voltage ranges. Low-power ohms ranges let you make accurate in-circuit measurements without switching on or damaging solid-state components. An auxiliary calibrated analog meter permits fast continuity checks and convenient observation of peaks or nulls. Meets the new UL 1244 standard for safety of electrical and electronic measuring and testing equipment, and ANSI C39.5 specs. Choose AC line power model for lowest price or AC/battery model for best flexibility. Impact-resistant case, tilt-view handle. Color-coded test leads with screw-on alligator clips, detachable AC line cord and manual.

460A-5 Digital Multimeter for AC line operation

For 120 V, Catalog No. 12651 \$378.00

For 220 V, Catalog No. 12652 378.00

For 240 V, Catalog No. 12653 378.00

460D-5 for AC line or rechargeable battery operation

Batteries not included

For 120 V, Catalog No. 12654 \$430.00

For 220 V, Catalog No. 12655 430.00

For 240 V, Catalog No. 12656 430.00

ACCESSORIES

Temperature Probe, Catalog No. 00758 \$115.75

RF Probe, Catalog No. 00748 39.75

40kV High Voltage Probe, No. 00749 49.25

Model 154-2 AC Amp-Clamp Adapter,

Catalog No. 12495 (see page 44) ... 48.25

Carrying Case, Catalog No. 01617 ... 40.25

Extra Test leads, Catalog No. 00043 ... 9.00

Model 154-2



SPECIFICATIONS

Resolution: AC/DC voltage 100 μV , AC/DC current 100 nA, resistance 0.1 Ω

Numerical Display: 3½ digits, 7 segment, 0.43" LED

Conversion Rate: 4 readings per second

Overrange Indication: "1" digit flashes beyond 1999 counts. Displays are within rated accuracy to 1000 counts above 1999 on DC voltage and 500 counts above 1999 on other modes.

Automatic Polarity: Automatic "+" or "-" sign displayed

Normal Mode Rejection: 55 dB min. at 60 Hz

Common Mode Rejection 90 dB min. at 60 Hz

Rated Circuit-to-Ground Voltage: (Maximum common mode voltage): 1000 volts (DC plus peak AC) max. from any measuring terminal to power line ground and/or earth ground except 50 V (DC plus peak AC) max. for 10 A ranges

Power Requirements:

AC operating or battery charging models for 120 V AC, 220 V AC or 240 V AC $\pm 10\%$ 50-400 Hz, 5 VA nominal for 460A, 8 VA for 460D

Battery operation (460D): Four nickel-cadmium "D" size rechargeable cells. Eveready type CH4 or equivalent (each cell is rated at 1.25 V, 4 ampere hours). Operation time (continuous with fully charged battery): 8 hours nominal. Battery recharge time: 16 hours, nominal.

Temperature: Operation: 0°C to +55°C. Storage: -40° to +60°C

Dimensions: 2.70" (68.6 mm) x 8.40" (213.4 mm) x 9.00" (228.6 mm)

Weight: Approximately 3 lbs. (1.36 Kg) without batteries

—Prices Are Suggested and Subject to Change Without Notice—

Simpson® Digital Multimeter Family



120 V AC
Models are
UL
LISTED

- Automatic range selection
- Range HOLD for fast repeated tests
- 3½ digit, 0.43" LED readout with autopolarity, floating decimal, zero blanking
- Custom MOS/LSI integrated circuitry
- Pushbutton function selection
- Resolves 100 μ V, 1 ohm, 100 nA
- High-impact shock-resistant case with tilt-view handle
- 120 V models are UL listed
- One-year warranty

Model 465A-3 for AC line operation. Complete with line cord, test leads and instruction manual.

For 120 V AC, Catalog No. 12664 **\$403.00**

For 220 V AC, Catalog No. 12665 **403.00**

For 240 V AC, Catalog No. 12666 **403.00**

Model 465D-3 for AC line rechargeable battery operation (batteries not included). Complete with line cord, test leads and instruction manual.

For 120 V AC, Catalog No. 12667 **\$453.00**

For 220 V AC, Catalog No. 12668 **453.00**

For 240 V AC, Catalog No. 12669 **453.00**

ACCESSORIES

Temperature Probe, Catalog No. 00758 **\$115.75**

RF Probe, Catalog No. 00748 **39.75**

40 KV High-Voltage Probe, Cat. No. 00749 **49.25**

Model 154-2 AC Amp-Clamp Adapter, Catalog No. 12495 (pg. 44) **48.25**

Rugged Carrying Case, Catalog No. 01617 **40.25**

Extra Test Leads, Catalog No. 00043 **9.00**

SPECIFICATIONS

Resolution (smallest indicated unit of change): 1 part in 2000. AC/DC voltage 100 μ V, AC/DC current 100 nA, Resistance 1 Ω

Numerical Display: 3½ digits, 7 segment, 0.43" LED

Conversion Rate: 4 readings per second

Ranging: Auto: Automatically upranges for readings 2000 counts and above; downranges for readings below 180 counts. Hold: Fixes measurement in a single range.

Automatic Polarity: Automatic "+" or "-" sign displayed

Zero Stability: $\pm 0.02\%$ of range/ $^{\circ}$ C (adjustable to zero)

Rated Circuit-to-Ground Voltage: (maximum common mode voltage): 1000 volts (DC plus peak AC) maximum from any measuring terminal to power line ground and/or earth ground except 50 V (DC plus peak AC) max. for 10A ranges

Power Requirements:

AC Operating or Battery Charging: 120 V AC, 220 V, and 240 V AC $\pm 10\%$, 50-400 Hz, 6 VA nominal

Battery Operation: Four nickel-cadmium "D" size rechargeable cells, Eveready type CH4 or equivalent

Battery Operation Time: 10 hours, nominal (continuous with fully charged battery)

Battery Recharge Time: 16 hours, nominal

Temperature: Operating: 0 $^{\circ}$ C to +55 $^{\circ}$ C. Storage: -40 $^{\circ}$ C to +60 $^{\circ}$ C

Dimensions: 2.70" (68.8 mm) x 8.40" (213.4 mm) x 9.00" (228.6 mm)

Weight: Approximately 3 lbs. (1.36 Kg) without batteries, 5 lbs. (2.66 Kg) with battery

MODEL 465-3 Autoranging DMM

Select AC or DC voltage, resistance or proper current mode; the 465 does the rest. This new 3½-digit 0.1% autoranging DMM reads out on bright 0.43" LEDs with properly positioned decimal point, auto polarity and zero blanking. A special HOLD function lets you lock the range in use so you can perform repeated measurements faster. All modes are overload protected. Meets UL 1244 standards and ANSI C39.5 requirements.

AUTORANGING DC VOLTAGE. Accuracy*: $\pm(0.1\% + 1 \text{ digit})$

Range	Maximum Indication	Input Impedance	Overload Protection
0.2 V	$\pm 1.999 \text{ V}$	10 M Ω	$\pm 1000 \text{ V DC}$
2.0 V	$\pm 1.999 \text{ V}$	all ranges	all ranges
20 V	$\pm 19.99 \text{ V}$		
200 V	$\pm 199.9 \text{ V}$		
1000 V	$\pm 1000 \text{ V (max. input)}$		

AUTORANGING AC VOLTAGE (Average-sensing RMS calibrated sine wave: 40 Hz to 20 KHz). Accuracy (% of reading + 2 digits)*: $\pm 0.5\%$ on 0.2 V, 2 V, 20 V ranges, from 40 Hz to 10 KHz, $\pm 1.0\%$ from 10 KHz to 20 KHz. On 200 V range: $\pm 0.5\%$ from 40 Hz to 1 KHz, $\pm 1.0\%$ from 1 KHz to 20 KHz. On 600 V range: $\pm 2.0\%$ from 40 Hz to 1 KHz.

Range	Maximum Indication	Input Impedance	Frequency Range
0.2 V	.1999 V	10 M Ω and 25 pF	40 Hz-20 KHz
2.0 V	1.999 V	10 M Ω and 25 pF	40 Hz-20 KHz
20 V	19.99 V	10 M Ω and 25 pF	40 Hz-20 KHz
200 V	199.9 V	10 M Ω and 25 pF	40 Hz-20 KHz
600 V	600 V (max. input)	10 M Ω and 25 pF	40 Hz-1 KHz

Overload protection: 600 V rms all ranges

AUTORANGING RESISTANCE Accuracy*: $\pm(0.4\% + 2 \text{ digits})$, except 20 M Ω range $\pm(1.0\% + 3 \text{ digits})$

LOW-POWER Range	Maximum Indication	Max. Open Circuit Voltage	Test Current	Overload Protected To
2 K Ω	1.999 K Ω	350 mV	100 μ A	130 V AC or V DC
20 K Ω	19.99 K Ω	all ranges	10 μ A	all ranges
200 K Ω	199.9 K Ω		1 μ A	
2000 K Ω	1999 K Ω		100 nA	

STANDARD Range	Maximum Indication	Full-Scale Voltage	Max. Open Current Voltage	Overload Protected To
2 K Ω	1.999 K Ω			
20 K Ω	19.99 K Ω	2.5 V	2.5 V	130 V AC or V DC
200 K Ω	199.9 K Ω	all ranges	all ranges	all ranges
2000 K Ω	1999 K Ω			
20 M Ω	19.99 M Ω			

AUTORANGING CURRENT DC Accuracy*: $\pm(0.25\% + 1 \text{ digit})$, except on 10 A range, which is $\pm 1.0\% + 2 \text{ digits}$. AC Accuracy*: $\pm(1.0\% + 2 \text{ digits})$, except 10 A range $\pm(1.5\% + 2 \text{ digits})$.

DC CURRENT Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
	DC Current, 2 mA		
0.2 mA	$\pm 1.999 \text{ mA}$	200 mV	30 mA
2.0 mA	$\pm 1.999 \text{ mA}$	2 V	30 mA
	DC Current, 20 mA		
20 mA	$\pm 19.99 \text{ mA}$	200 mV	2 A
	DC Current 2 A		
0.2 A	$\pm 1.999 \text{ A}$	200 mV	2 A
2.0 A	$\pm 1.999 \text{ A}$	2 V	2 A
	DC Current 10 A		
10 A	10.00 A	100 mV	10 A
AC CURRENT			
	AC Current 2 mA		
0.2 mA	.1999 mA	200 mV	30 mA
2.0 mA	1.999 mA	2V	30 mA
	AC Current 20 mA		
20 mA	19.99 mA	200 mV	2 A
	AC Current 2 A		
0.2 A	.1999 A	200 mV	2 A
2.0 A	1.999 A	2 V	2 A
	AC Current 10 A		
10 A	10.00 A	100 mV	10 A

Frequency Range: 40 Hz-5 KHz

* % of reading: +15 $^{\circ}$ C to +35 $^{\circ}$ C

† Fuse protected

Simpson® Digital Multimeter Family

POPULAR 360-2 Portable DMM

- 3½ digit, auto polarity, 0.43" LED display
- 29 popular ranges including 2 "low power" ohms ranges
- Measures AC/DC voltage, current and resistance
- Calibrated zero-center analog meter for nulling, peaking and scanning trends
- Analog output provision permits monitoring input signal with chart recorder
- Exclusive MOS/LSI circuitry provides compactness with high reliability and low-power dissipation
- Conforms to applicable ANSI C39.5-1974 safety requirements
- Separate battery charger and line cord

This versatile digital multimeter will satisfy most general test and service requirements. Special features include two ranges of low-power ohms for solid-state circuit servicing, and a calibrated zero-center analog meter for continuity checks and peaks or nulling. Calibrated analog output interfaces with a chart recorder. The battery charger removes with the line cord to minimize weight for portable use. The traditional case styling is both compact and rugged.

360-2 Digital VOM. Complete with test leads, AC charger/adaptor and instruction manual (batteries not included).

For 120 V AC, Catalog No. 12286 **\$350.00**

For 220 V AC, Catalog No. 12287 **350.00**

ACCESSORIES

Temperature Tester, Catalog No. 00758 **\$115.75**

40 KV DC High-Voltage Probe, Cat. No. 00432 ... **49.25**

RF Probe, Catalog No. 00433 **39.75**

Model 154-2 AC Amp-Clamp Adapter,

Catalog No. 12495 (pg. 44) **48.25**

Extra 120 V AC Adapter/Charger Cat. No. 12288 . **13.75**

Extra 240 V AC Adapter/Charger, Cat. No. 12289 . **13.75**

Carrying Case, Catalog No. 00816 **39.75**

Batteries, Catalog No. 00045 **Pkg. of 4, 45.00**

Extra Test Leads, Catalog No. 00125 **9.00**

SPECIFICATIONS

Resolution (smallest indicated unit of change):

AC/DC voltage 100 μ V, AC current 100 nA, DC current 10 nA, resistance 0.1 Ω

Numerical Display: 3½ digits, 7 segment, 0.43" LED

Conversion Rate: 3 readings per second

Overrange Indication: All digits flash beyond 1999 counts.

Displays are within rated accuracy to 500 counts above 1999

Automatic Polarity: Automatic "+" or "-" sign displayed

Analog Display: 50-0-50 μ A meter

Analog Output: Level = 1 V DC at 1000 counts

Normal Mode Rejection: 35 dB min. at 60 Hz

Common Mode Rejection: with 1 K Ω unbalance, 80 dB min. at 60 Hz, 100 dB min. at DC

Rated Circuit-to-Ground Voltage: (maximum common mode voltage): 1000 volts (DC plus peak AC) maximum from any measuring terminal to power line ground and/or earth ground except 50 V (DC plus peak AC) max. for 10 A ranges

Power Requirements: AC operating or battery charging models for 120 V AC or 240 V AC $\pm$ 10% 50-400 Hz.

Battery operation: 4 nickel-cadmium "C" cells (not supplied), GE #GCT1.5SB or Eveready CH1.8 or Gould "C" size; 1.25 V rating, 1.8 amp hours. Battery length, 1.940" max. **Operation Time** (continuous with fully charged battery): 8 hours nom. **Recharge Time:** 16 hours, nom., switch must be in battery charge position only. Unit may be recharged while operating, 30 hours time, nom.

Temperature: Operating: 0°C to +50°C. Storage: -40° to +60°C.

Dimensions: 2.70" (68.6 mm) x 8.40" (213.4 mm) x 9.00" (228.6 mm)

Weight: Approximately 4 lbs. (1.81 Kg) without batteries



RANGES

DC VOLTAGE Accuracy*: $\pm(0.25\% + 1 \text{ digit})$

Range	Maximum Indication	Input Impedance	Overload Protected To
200 mV	199.9 mV	10 m Ω All Ranges	350 V
2 V	1.999 V		350 V
20 V	19.99 V		1100 V
200 V	199.9 V		1100 V
1000 V	600 V (max. input)		1100 V

AC VOLTAGE (Average-sensing rms calibrated sine wave. Accuracy: $\pm(0.5\% + 1 \text{ digit})$ 40 Hz - 1 KHz, $\pm(1.0\% + 1 \text{ digit})$ 1 KHz - 10 KHz, $\pm(2.0\% + 2 \text{ digits})$ 10 KHz - 20 KHz, except 200 V range: $\pm(5\% \text{ of reading} + 2 \text{ digits})$)

Range	Maximum Indication	Input Impedance	Overload Protection
200 mV	199.9 mV	10 M Ω , 100 pF All Ranges	350 V rms
2 V	1.999 V		350 V rms
20 V	19.99 V		650 V rms
200 V	199.9 V		650 V rms
600 V	600 V (max. input)		650 V rms

RESISTANCE Accuracy*: $\pm(0.5\% + 1 \text{ digit})$, except on 2 M Ω and 20 M Ω ranges, which are $\pm(1.0\% + 2 \text{ digits})$

Range	Maximum Indication	Full-Scale Voltage	Test Current	Overload Protected To
200 Ω **	199.9 Ω	200 mV**	1 mA	150 V rms
2 K Ω	1.999 K Ω	2 V	1 mA	150 V rms
20 K Ω **	19.99 K Ω	200 mV**	10 μ A	250 V rms
200 K Ω	199.9 K Ω	2 V	10 μ A	250 V rms
2 M Ω	1.999 M Ω	2 V	1 μ A	250 V rms
20 M Ω	19.99 M Ω	2 V	100 nA	250 V rms

**Low-power ohms

DC CURRENT Accuracy*: $\pm(0.5\% + 1 \text{ digit})$, except on 2 A and 10 A ranges, which are $\pm(1.0\% + 1 \text{ digit})$

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
20 μ A	19.99 μ A	200 mV	3 mA
200 μ A	199.9 μ A	200 mV	25 mA
2 mA	1.999 mA	200 mV	0.5 amp†
20 mA	19.99 mA	200 mV	0.5 amp†
200 mA	199.9 mA	200 mV	0.5 amp†
2 A	1.999 A	200 mV	3 amps
10 A	10.00 A (max. input)	100 mV	10 amps

AC CURRENT (40 Hz to 10 KHz) Accuracy*: $\pm(0.1\% + 1 \text{ digit})$, except on 2 A and 10 A ranges, which are $\pm(2\% + 2 \text{ digits})$

Range	Maximum Indication	Full Range Voltage Drop	Overload Protected To
200 μ A	199.9 μ A	200 mV	25 mA
2 Ma	1.999 mA	200 mV	0.5 amp†
20 mA	19.99 mA	200 mV	0.5 amp†
200 mA	199.9 mA	200 mV	0.5 amp†
2 A	1.999 A	200 mV	3 amps
10 A	10.00 A (max. input)	100 mV	10 amps

*% of reading: +15°C to +35°C

†Fuse protected

Simpson® Electronic Frequency Counter Timer



- For measuring frequencies, elapsed time and events
- Ideal for CB transceiver testing
- Frequencies from 5 Hz to 50 MHz in four ranges
- Interfacing with a high frequency prescaler, such as the Simpson Model 7020 below, extends the Model 7016 counting capability to high frequency signals in excess of 500 MHz
- Elapsed time from 0.01 sec to 19999.99 sec
- Totalizes from 1 to 1999999
- Large, highly visible 0.55" planar numerical display
- State-of-the-art IC and PC board construction
- Other standard features include: display storage selection, automatic decimal point location, variable display time, manual reset, overrange and gate time indications, high input impedance and input overload protection

Model 7016 with probe assembly, power cord and operator's manual, Catalog No. 22970 **\$447.00**

Model 7016A incorporates 1 ppm internal oscillator accuracy as compared to 5 ppm for the 7016. Supplied with probe assembly, power cord and operator's manual, Catalog No. 22972 **584.00**

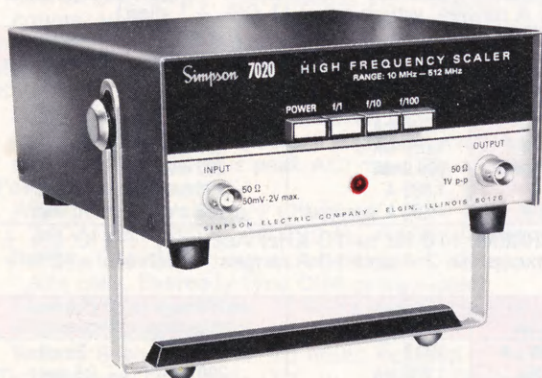
Model 7016B incorporating BCD output, with probe assembly, power cord and operator's manual, Catalog No. 22974 **503.00**

Replacement Probe, Catalog No. 00238 **20.25**

MODEL 7016

SPECIFICATIONS

- Frequency:** 5 Hz to 50 MHz
Gate Time: 10 msec (0.1 KHz resolution) 0.1 sec, 1.0 sec, 10 sec (0.1 Hz resolution)
Accuracy: ± 1 count $\pm$ time base accuracy
Elapsed Time: 0.01 sec to 19999.99 sec based on 1,000,000 counts overrange
Frequency: 5 Hz to 50 MHz
Accuracy: ± 1 count
Self Test: Internal 100 KHz signal to test logic circuits and display
Input: AC coupled
Frequency: 5 Hz to 50 MHz
Impedance: 1 M Ω shunted by 30 pF
Sine Wave Sensitivity: 50 mV rms, from 5 Hz to 50 MHz
Voltage, max.: 240 V rms, derated to 50 V rms at 1 MHz, and 10 V rms at 50 MHz
Temperature Range: Operating: 0°C to +45°C
Storage: -40°C to +70°C
Power Requirement: 120/240 V AC $\pm 10\%$, 50-60-400 Hz; 20 VA approx.
Size: 4" H x 8.5" W x 8" D (101.6 x 215.9 x 203.2 mm)
Weight: 6.5 lbs. (2.9 Kg), approx.
- | Internal Time Base: | 7016, 7016B | 7016A Option |
|--|--------------------|------------------|
| Frequency: | 2.0 MHz | 2.0 MHz |
| Temperature Stability: | | |
| 0°C to +45°C | ± 10 ppm max. | ± 1 ppm max. |
| Aging Rate, Per Year: | ± 5 ppm max. | ± 1 ppm max. |
| Stability for $\pm 10\%$ line voltage variation: | ± 1.0 ppm max. | ± 0.1 ppm |
- External Oscillator:** Frequency: 1 MHz square wave
Requirements: Amplitude: Logic "1": +2.4 V to +5 V
 Logic "0": 0 to +.4 V
Output Drive: Standard TTL logic compatibility
Display: 0.55", 7-segment, planar gas discharge, 6 digits
Storage: selectable by front panel switch
Sample Rate: Continuously adjustable from 2 readings per second to hold. HOLD input on optional rear panel BCD output connector provides sampling by application of a negative pulse
Reset: Front panel RESET pushbutton switch resets all decade counters and initiates new measurements



Model 7020 with power cord, connectors and operator's manual, Cat. No. 22739 . **\$506.00**
Coax. Cable Assembly, No. 00418 . . . **19.25**

MODEL 7020 HIGH FREQUENCY SCALER

- Extends measuring capability of low frequency counters to 512 MHz
- Interfaces with Simpson Models 7016, 7026 and 710 as well as with most competitive frequency counters
- Switch-selectable direct frequency divisions of 1, 10 and 100
- IC construction achieves high reliability, low power dissipation and compact design

SPECIFICATIONS

- Input:** f/1: 10 MHz to 100 MHz, sine or square wave; f/10: 10 MHz to 512 MHz, square wave; 40 MHz to 512 MHz, sine wave; f/100: 10 MHz to 512 MHz, square wave, 40 MHz to 512 MHz, sine wave
Power: 120/240 V AC $\pm 10\%$, 50-60-400 Hz 6 VA approx.
Size: 2.5" H x 6" W x 8" D (63.5 x 152.4 x 203.2 mm)
Weight: 2.5 lbs. (1.13 Kg)
- Sensitivity, amplitude:** 50 mV rms in., 2 V rms max., protected up to 5 V rms
Impedance: 50 Ω , AC coupled
Voltage standing wave ratio: 2.0:1 max. in/out
Output: Amplitude: 1 V p-p
Impedance: 50 Ω , AC coupled

Simpson® Universal Electronic Counter



Model 7026 with probe assembly, power cord and operator's manual, Catalog No. 22971 . . . \$501.00

Model 7026A incorporates 1 ppm internal oscillator accuracy as compared to 5 ppm for the Model 7026. Supplied with probe assembly, power cord and operator's manual, Catalog No. 22973 . . . \$602.00

SPECIFICATIONS

Frequency: 5 Hz to 50 MHz

Gate Time: 10 μ sec (0.1 MHz resolution), 100 μ sec, 1 msec, 10 msec, 100 msec, 1 sec, 10 sec (0.1 Hz resolution)

Accuracy: ± 1 count, $\pm$ time base accuracy

Period: Display Range: Single 100 μ sec to 0.2 sec multiple, periods averaged, 100 nsec to 0.2 sec

Averaged: 1, 10, 100, 1000

Resolution: Single, 10 μ sec multiple periods, averaged, 10 nsec

Accuracy: ± 1 count, $\pm$ time base accuracy

$$\text{Frequency Ratio: } \frac{F_A}{F_B} \pm \frac{\text{Trigger Error}^*}{\text{Periods, averaged}}$$

Display range: Single: 1 to 1,999,999. Multiple: 0.001 to 1,999,999. Both based on 1,000,000 counts overrange

F_A : 5 Hz to 50 MHz

F_B : 5 Hz to 2 MHz

Multipliers: F_B pre-scaled by a factor of 1, 10, 100 and 1000 ± 1 count of F_A

$$\pm \frac{F_B \text{ Trigger Error}^*}{\text{Multiple Setting}}$$

Time Interval A-B: 100 μ sec to 1,999,999 $\times 10$ sec based on 1,000,000 counts overrange

Resolution: 10 μ sec to 10 sec in decade steps

Trigger Slope: A (Start)—Positive

B (Stop)—Negative

Accuracy: ± 1 count, $\pm$ time base accuracy $\pm A$ & B trigger error*

Totalize: 1 to 1,999,999, based on 1,000,000 counts overrange

Frequency: 5 Hz to 50 MHz

Accuracy: ± 1 count

Self Test: Internal 100 KHz signal to test logic circuits and display

A general purpose counter with 0-50 MHz response extendable to 512 MHz with Model 7020 Scaler. Ideal for measuring frequency, periods, ratio of two different frequencies, time intervals or events. Model 7026A offers highest accuracy.

MODEL 7026

- Large, high-visibility 0.55" planar numerical display
- Frequencies from 5 Hz to 50 MHz in seven ranges
- Interfacing with a high frequency prescaler, such as the Simpson Model 7020 detailed on page 34, extends high frequency signals in excess of 500 MHz
- Dual inputs for convenient measurements
- Periods from 100 mS to 0.2 sec (sine wave)
- Multiple periods averaged from 100 nS to 0.2 sec (sine wave)
- Ratio and multiple ratio of two frequencies
- Time interval from 100 μ sec to 1999999 $\times 10$ sec.
- State-of-the art IC and PC board construction
- Other standard features include: display storage selection, automatic decimal point location, variable display time, manual reset, overrange and gate time indications, high input impedance, and input overload protection

Model 7026B with additional BCD output, including probe assembly, power cord and operator's manual, Catalog No. 22975 . . . \$561.00

Replacement Probe, Catalog No. 00238 . . . 20.25

Input A (AC coupled): Impedance: 1 M Ω shunted by 30 pF

Frequency: 5 Hz to 50 MHz

Sine Wave Sensitivity: 50 mV rms

Voltage, max.: 240 V rms, from 5 Hz to 100 KHz, derated to 50 V rms at 1 MHz, and 20 V rms at 50 MHz

Input B (AC coupled): Impedance: 600 K Ω shunted by 30 pF

Frequency: 5 Hz to 2 MHz

Sine Wave Sensitivity: 0.1 V rms, 200 Hz to 2 MHz; 0.3 V rms, 5 Hz to 200 Hz

Voltage max.: 240 V rms, from 5 Hz to 100 KHz, derated to 50 V rms at 1 MHz

Internal Time Base:	7026, 7026B	7026A Option
Frequency:	2.0 MHz	2.0 MHz
Temperature Stability:	± 10 ppm max. 0°C to +45°C	± 1 ppm max. 0°C to +45°C
Aging Rate:	± 5 ppm max./yr.	± 1 ppm max./yr.
Stability for 10% line voltage variation:	± 1 ppm	± 0.1 ppm

External Oscillator Requirements: Frequency: 1 MHz square wave

Amplitude: Logic "1", +2.4 V to +5 V; Logic "0", 0 V to .4 V

Output Drive: Standard TTL logic compatibility

Display: 0.55" 7-segment planar gas discharge type, 6 digits

Storage: selectable by front panel switch

Sample Rate: Continuously adjustable from 2 readings per second to hold. Hold input on optional rear panel BCD output connector provides sampling by applications of a negative pulse.

Reset: Front panel pushbutton switch resets all decade counters and initiates new measurements

Temperature Range: Operation: 0°C to +45°C

Storage: -40°C to ± 70 °C

Power Requirements: 120/240 V AC $\pm 10\%$, 50-60-400 Hz; 20 VA approx.

Size: 4"H x 8.5"W x 8"D (101.6 x 215.9 x 203.2 mm)

Weight: 6.5 lbs. (2.95 Kg), approx.

* Less than $\pm 0.3\%$ of one period for sine waves with signal-to-noise ratio of 40 dB or better

Simpson® Service Test Equipment

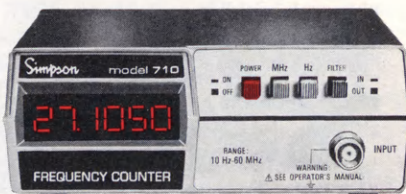
MODEL 710 COMPACT FREQUENCY COUNTER

APPLICATIONS

- CB/communications service
- Production line testing
- Frequency monitoring
- R & D laboratory use

FEATURES

- Covers 10 Hz to 60 MHz
- 2 ranges—Hz and MHz
- 6 digit 0.35" LED readout, overrange indicator
- Accurate... ± 1 count ($\pm$ time base accuracy), standard 10 ppm time base
- Resolves 1 Hz
- Switchable low-pass filter eliminates input noise which would cause erroneous readings
- Highly reliable LSI circuitry
- Compact size, has folding bench stand



SPECIFICATIONS

Frequency Range: 10 Hz to 60 MHz

Gate Time: 10 msec (0.1 KHz resolution), 1 sec (1 Hz resolution)

Accuracy: ± 1 count $\pm$ time base accuracy

Input Impedance: 1 M Ω shunted by 30 pF

Sine Wave Sensitivity: 50 mV rms, from 10 Hz to 50 MHz; 100 mV rms, 50 MHz to 60 MHz

Maximum Input Voltage: 240 V peak, from 10 Hz to 100 KHz; derated to 100 V peak at 1 MHz and 25 V peak at 60 MHz

Frequency: 6.5536 MHz

Temperature Stability: ± 10 ppm maximum, 0°C to +45°C

Aging Rate: ± 5 ppm maximum per year

Model 710 Frequency Counters with AC adapter and instruction manual.

For 120 V, Catalog No. 12707 \$199.00

For 220 V, Catalog No. 12708 199.00

ACCESSORIES

RF Connecting Cable. UHF connector one end, BNC connector at other end, 4' long cable, Catalog No. 00754 11.50

Dummy Load. 50 ohms, 15 watt capacity, UHF connectors, Catalog No. 00755 22.50

RF Connecting Cable. UHF connectors both ends. Use with dummy load, Catalog No. 00753 11.50

12 V DC Auto Cigarette Lighter Adapter, Catalog No. 00756 19.25

Carrying Case, Catalog No. 00747 29.50

General Purpose Probe, Cat. No. 00238 20.25

Stability with Line Voltage Variations: ± 1 ppm for $\pm 10\%$ line voltage variation

Input Filter: 3 dB at 1 MHz (low-pass)

Display: 0.35" character height, 7-segment LED type, 6 digits

Sample Rate: 5 samples/sec at MHz switch position, 0.5 sample/sec at Hz switch position

Operating Temperature: 0°C to +45°C

Storage Temperature: -40°C to +70°C

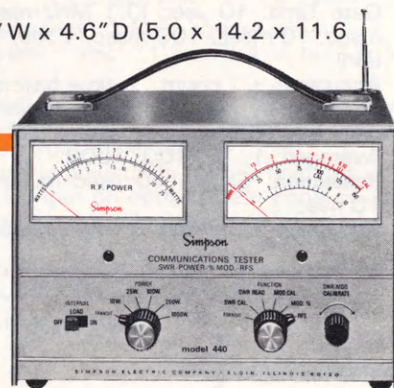
Power Requirement: 120 V AC $\pm 10\%$, 50-400 Hz; approximately 5 VA

Dimensions: 2" H x 5.63" W x 4.6" D (5.0 x 14.2 x 11.6 cm)

Weight: 12 oz. (0.34 Kg)

MODEL 440 COMMUNICATIONS TESTER

Measures SWR, Power Output, Percent Modulation, Relative Field Strength For CB, Amateur, Marine Radio Testing



- SWR—checks reflected power from antenna and transmission line
- Power—measures average RF power in 5 ranges—0-10, 25, 100, 250 and 1000 watts. Conversion chart for peak power included
- Percent Modulation—a quick check of the microphone and modulation circuits
- Relative Field Strength—checks the overall operation of transmitter, transmission line and antenna system
- Wide Frequency Range—covers 1.8 MHz to beyond 54 MHz
- Dual Meters—simultaneous readings of average power and SWR, or average power and percent of modulation
- Monitor Jacks—monitor modulation envelope on scope and/or frequency with counter
- In-Line Operation—to 1 KW or built-in 50 ohm dummy load to 25 watts
- Self-Powered—no batteries or external power source required

Model 440 Communications Tester. Complete with instruction manual, Catalog No. 12515 \$130.00

Connecting Cable. 4-ft. long RG-58U coaxial cable with male PL-259 connector each end, Catalog No. 00753 .. 11.50

SPECIFICATIONS

Frequency Range: 1.8-54 MHz

Impedance: 50 Ω nominal

Power Ranges: 0-10/25/100/250/1000 W CW, average
Full Scale Accuracy: $\pm 5\%$ at 27 MHz; $\pm 10\%$ over frequency except $\pm 15\%$ from 5-15 MHz and 40-54 MHz

SWR: 1.0-10 direct reading

Accuracy: $\pm 5\%$ of arc

Power Requirement for Full Scale Calibr.: 1 W min., 15 MHz-54 MHz; 2 W min., 10 MHz-15 MHz; 10 W min., 4 MHz-10 MHz, 40 W min., 1.8 MHz-4 MHz

Percent Modulation Indication: 0-150% direct reading

Accuracy: $\pm 5\%$ of Full Scale (30%-75% modulation)

Power Requirement for Full Scale Calibration: 1 W min. for reference (100%)

Relative Field Strength Indication: 0-10 linear scale

Upper Cutoff Frequency: 230 MHz min.

RFS Sensitivity: 10 μ V/mW/cm² min.

RFS Antenna: Integral telescoping antenna extends to 12"

Dummy Load Power Rating: 25 Watts intermittent

Impedance: 50 Ohms nominal

Input VSWR: 1.08:1 nominal

Readout: Two 3" 50 μ A FS pivot and jewel meters

Monitor Jacks: 2 pin jacks provided for monitoring RF, modulated RF and the demodulated audio

RF Connectors: Two SO-239 (UHF)

Weight: 2 lbs. 6 oz. (1.07 Kg)

Dimensions: 5.375 x 8 x 4.5" (13.65 x 20.32 x 11.43 cm)

Temp.: oper., 0°C to +55°C, stor., -65°C to +105°C.

Simpson® Function Generator



NEW MODEL 420 FUNCTION GENERATOR

- Provides sine, triangle, square, DC and TTL output
- Wide 0.1 Hz to 1 MHz coverage in 7 ranges
- Voltage-controlled generator input for sweep
- Continuously variable DC offset with Off position
- Compact portable signal source for bench or field
- Full day's operation on batteries, recharge overnight

New portable generator for audio and communications servicing, laboratory and production use.

Model 420 with line cord and manual.
Model 420A for AC line operation only.

For 120 V, Cat. No. 12671 . . \$194.00

For 220 V, Cat. No. 12672 . . 194.00

For 240 V, Cat. No. 12673 . . 194.00

Carrying Case,

Catalog No. 01617 40.25

Model 420D for AC line and rechargeable battery operation. Batteries not included.

For 120 V, Cat. No. 12674 . \$231.00

For 220 V, Cat. No. 12675 . 231.00

For 240 V, Cat. No. 12676 . 231.00

Batteries,

Catalog No. 00045 . Pkg. of 4, 45.00

SPECIFICATIONS

Basic Outputs: Sine, triangle, square, DC and TTL (separate BNC)

Frequency Range: 0.1 Hz to 1 MHz in seven ranges

Amplitude: 20 V p-p open circuit (10 V p-p into 600 ohms)

Amplitude Control: Continuously variable, >30 dB; fixed attenuation, 0-30 dB

VCG Input: ± 20 V maximum, 2 K Ω input impedance. Frequency decreases from dial setting with negative voltage.

DC Offset: Continuously variable with Off position

Dial Accuracy: $\pm 5\%$ F.S.

Sine Wave Distortion: <1% 10 Hz to 100 KHz, <2% at all other frequencies

Triangle Wave Non-Linearity: <1% up to 100 KHz

Square Wave Rise/Fall Time: <100 nsec into 600 ohms/20 pF

Square Wave Non-Symmetry: <1% up to 100 KHz

VCG Range: >300:1 with 0 to -5 V external signal with 1000:1 capability

TTL Output: Fixed TTL compatible output will drive up to 10 TTL loads. <25 nsec rise/fall time.

DC Offset: Continuously variable, maximum of 10 V open circuit or ± 5 V into 600 ohms (maximum V AC + V DC without clipping). Off position is provided.

Output Impedance: 600 ohms, $\pm 5\%$
Amplitude Flatness: ± 0.1 dB up to 20 KHz, ± 0.3 dB overall, sine wave

Square Wave Aberration: <3%

Temperature Stability (after 15 minutes warm-up): Frequency: $\pm 0.1\%/^{\circ}\text{C}$; Amplitude: ± 0.05 dB/ $^{\circ}\text{C}$

Line Voltage Stability: Frequency: $\pm 0.1\%$ per ± 10 VAC variation; Amplitude: ± 0.05 dB per ± 10 VAC variation

Operating Temperature: 0 to $+50^{\circ}\text{C}$

Power Requirements: 120/220/240 V AC $\pm 10\%$, 50/60 Hz, 6 VA. 4 "C" size nickel-cadmium batteries for D version only (8 hours of operation per full charge)

Size: 2.7 x 8.4 x 9.0"

Weight: A version, 3 lbs.;

D version, 4 lbs. with batteries

Chroma-Line® Color Pattern Generator

MODEL 431 PORTABLE GENERATOR

- Compact, weighs 13 oz.
- 28 patterns, 13 tests
- Easy, accurate adjustment of color and black-and-white sets
- More performance for the price than any other small size unit
- One 9-V battery gives approximately 100 hours of use
- Digital IC logic countdown chains
- Crystal-controlled chroma sub-carrier oscillator for stability, 3 VHF and 2 UHF channel outputs
- Adjustable chroma and RF output
- External access battery compartment

SPECIFICATIONS

RF OUTPUT

Frequency: CH 3 (61.25 MHz), CH 4 (67.25 MHz), CH 7 (175.25 MHz), CH 23 and 52 (3rd and 5th overtones of CH 7, respectively). CH 3, 4, and 7 are L-C controlled

Frequency Accuracy: $\pm 0.02\%$ at reference conditions (all channels)

Frequency Tolerance: $\pm 0.15\%$ over temperature range (all channels)

Impedance: 75 ohms (all channels)
Level: Adjustable to approximately 20 mV typical (all channels)

CHROMA OFFSET SUBCARRIER

Frequency: 3.563795 MHz, crystal controlled

Frequency Accuracy: $\pm .001\%$ at reference conditions

Frequency Tolerance: $\pm .01\%$ over temperature range

Level: Adjustable from 0-200%

MASTER CLOCK

Frequency: 378.0 KHz, ceramic resonator controlled

Frequency Accuracy: $\pm .005\%$ at reference conditions

Frequency Tolerance: $\pm 1\%$ over temperature range

TEST PATTERNS (28 total)

Color: Ungated rainbow

Color Bars: Three bars, gated, spaced at 90° , 180° and 270° phase intervals from burst: R-Y, B-Y, - (R-Y)

Ten bars, gated, spaced at 30° phase intervals from burst

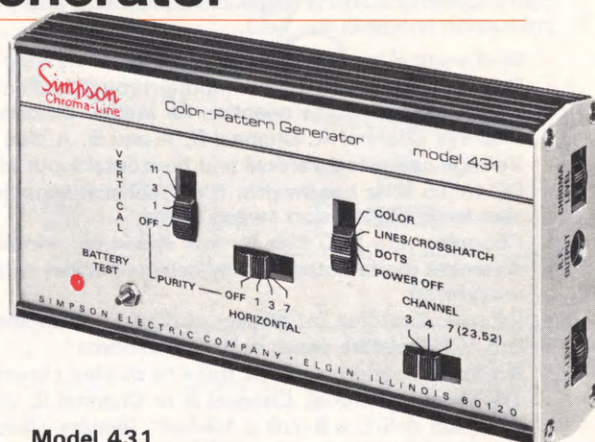
Horizontal Lines: 1, 3 or 7

Vertical Lines: 1, 3 or 11

Cross Hatch: 1x1, 1x3, 1x7, 3x1, 3x3, 3x7, 11x1, 11x3, 11x7

Dots: 1, 1x1, 1x3, 1x7, 3x1, 3x3, 3x7, 11x1, 11x3, 11x7

Blank Raster: Purity, white, no noise (sync. modulation only)



Model 431

Color Pattern Generator. Complete with battery, cable assembly and operator's manual,

Catalog No. 12511 \$147.00

Carrying Case,

Catalog No. 00817 11.50

Reference Conditions: 25°

($\pm 5^{\circ}\text{C}$) ambient temperature and 60° ($\pm 15\%$) relative humidity

Operating Temperature Range:

0°C to $+65^{\circ}\text{C}$

Storage Temperature: -65°C to $+150^{\circ}\text{C}$

Power Requirements: One 9 V alkaline cell, NEDA 1604A

Size: 6.287" L x 3.156" W x 1.406" H (160 x 80 x 36 mm)

Weight: 13 oz. (368 gm)

Simpson® Oscilloscopes



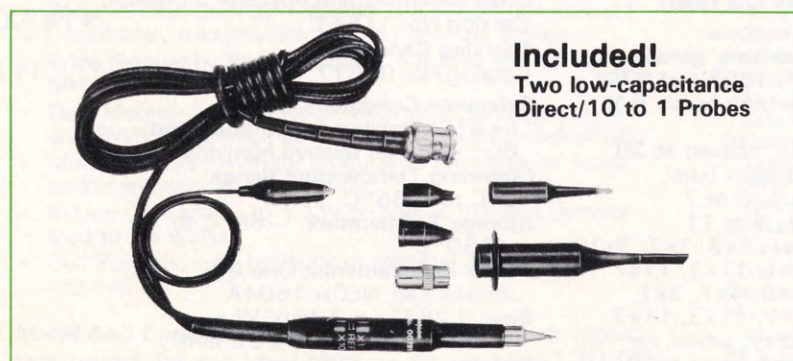
NEW! MODEL 454 15 MHz DUAL TRACE TRIGGERED SWEEP 3" SCOPE

Ideal for industrial and laboratory measurement, production line circuit alignment, checkout, trouble-shooting, and TV service.

Model 454, with operator's manual, and two #00791 probes.	
For 120 V AC, No. 12524.....	\$730.00
For 240 V AC, No. 12533.....	730.00
Accessories Pouch, Cat. No. 00783.....	24.00
Protective Cover, Cat. No. 00784.....	7.75
Extra Direct/10 to 1 Probe, Cat. No. 00791.....	44.00

For design, development and servicing of analog and digital electronics circuitry, communications and audio equipment, and TV . . . in the lab, shop, production line or in the field.

- Dual vertical inputs permit simultaneous viewing of two waveforms
- Differential amplifiers from inputs through deflection stages provide common mode noise rejection for stable, distortion-free waveforms
- Displays Channel A, Channel B, A and B, A plus B, A minus B
- Voltage calibrated vertical and horizontal input attenuators
- DC to 15 MHz bandwidth, 5 mV/division sensitivity, 100 nsec/division to .5 sec/division sweep range
- Chopping rate 100 KHz for low speed waveforms
- Alternate mode automatically selected when viewing high speed waveforms
- 24 nsec rise time for display of digital pulses and fast sweeps
- 0.5 V P-P square wave calibration source
- X5 magnification expands trace to display complex waveforms
- Triggering—external, Channel A or Channel B, with TV sync position
- Compact 4-5/8 x 9-7/8 x 13-1/4" weighs 13 lbs.
- Two low capacitance Direct/10 to 1 Probes included



SPECIFICATIONS

VERTICAL AMPLIFIER (CH A and CH B)

Sensitivity: 5 mV/div. to 10 V/div. calibrated in 1-2-5 sequence in 11 steps; accuracy $\pm 5\%$ F.S.; continuous control between steps

Bandwidth:

DC coupled: DC to 15 MHz (-3 dB)
AC coupled: 5 Hz to 15 MHz (-3 dB)

Rise Time: 24 nsec

Input Impedance: 1 M Ω , 35 pF

Maximum Input Voltage: 500 V (DC + AC peak) with 10X probe to 1 KHz. 250 V with direct probe.

Calibration Voltage: 0.5 V P-P, $\pm 1\%$ 1 KHz square wave approx.

HORIZONTAL AMPLIFIER

(Input through CH B)

Sensitivity: 5 mV/div. to 10 V/div. (same as vert. sensitivity)

Bandwidth, at -3 dB: DC or 5 Hz to 1 MHz

Input Impedance: 1 megohm, 35 pF

Maximum Input Voltage: 500 V (DC + AC peak) with 10X probe. 250 V with direct probe.

SWEEP RANGES

Time/cm Range: .5 μ sec/div. to .5 sec/div. in 1-2-5 sequence in 19 calibrated steps; uncalibrated continuous control between steps. Pushbutton TV sync. $\pm 5\%$ F.S. accuracy.

TRIGGERING

Source: External, CH A, CH B

Mode: Normal and automatic

Coupling: AC

Slope: - or + of trigger signal

Sensitivity: Internal: 1 div., 5 Hz to 15 MHz
TV Sync: .5 div.

External: .5 V P-P from 5 Hz to 15 MHz

CRT: 75AWB31 3" round flat face, 4.8 x 6 cm display, P31 phosphor, high-contrast graticule

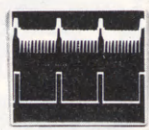
Operating Temperature: 0° to +45°C

Power Requirements: 120 V AC or 240 V AC ($\pm 10\%$), 50 or 60 Hz, 18 VA

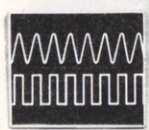
Weight: 13 lbs.

Size: 4-5/8" H x 9-7/8" W x 13-1/4" D

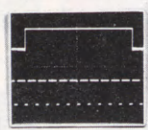
Simpson® Oscilloscopes



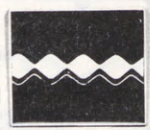
Display composite video and AGC pulse



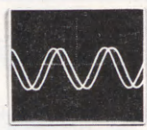
Display op-amp input/output, A/D converter



Check logic including countdowns and PLL



27 MHz "CB" envelope and modulating signal

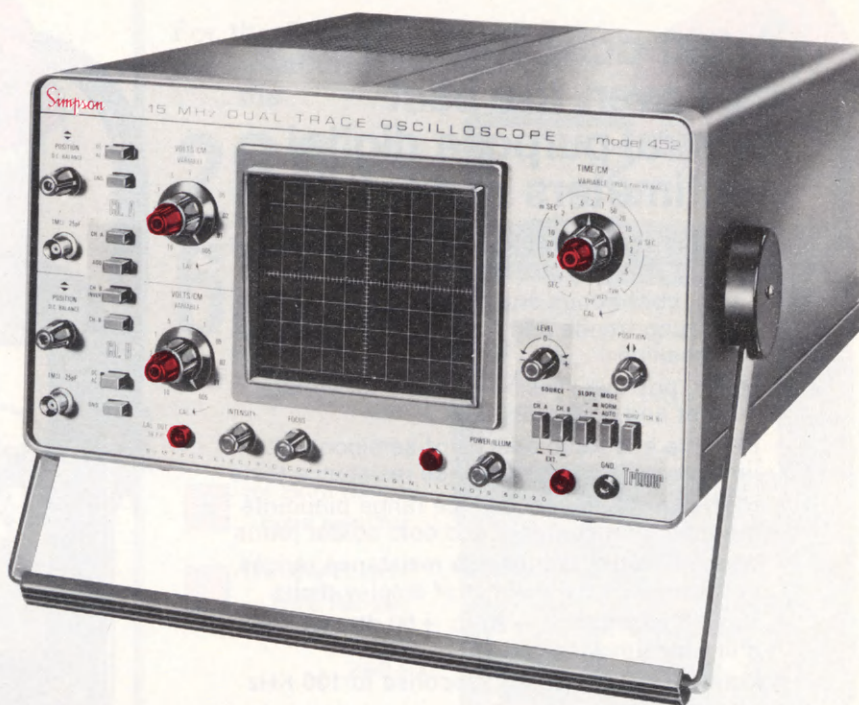


Check phase shift and distortion in amplifiers

MODEL 452 DUAL TRACE 15 MHz TRIGGERED SWEEP SCOPE

For design, development and service of digital circuitry, communications, audio and TV equipment...in lab, shop or in the field.

- DC to 15 MHz (-3 dB) bandwidth
- Reliable integrated circuitry and all solid-state components (except CRT)
- Triggering—internal and external with TVV, TVH, VITS sync positions
- Sweep automatically shifts between Chop and Alternate
- 24 nsec rise time, displays digital pulses or other fast sweeps
- Front-panel X-Y displays using matched vertical amplifiers
- Displays CH A, CH B, A & B, A + B, A-B
- 0.5 V P-P 1 KHz square wave calibrator
- Voltage-calibrated vertical and horizontal inputs
- X5 trace magnification



Model 452 Dual Trace Scope, with operator's manual, less probes.

For 120 V AC, No. 12513 . . . **\$919.00**

For 220-240 V AC, No. 12514 . . . **919.00**

Model 452 Scope with two No. 00791 probes.

For 120 VAC, No. 12537 . . . **\$997.00**

For 220-240 VAC, No. 12536 . . . **997.00**

ACCESSORIES

Extra Direct/10-to-1

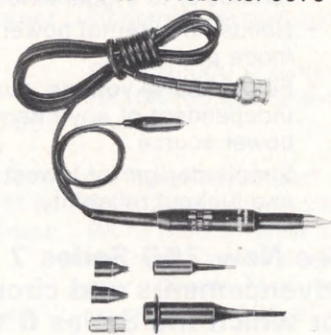
Probe, No. 00791 . . . **44.00**

Protective Cover, Cat. No. 00792 . . . **18.25**

Light Hood, Cat. No. 00793 . . . **11.50**

Direct/10 to 1 Probe No. 00791

Direct/10 to 1 Probe No. 00791



SPECIFICATIONS

VERTICAL AMPLIFIER

(CH A AND CH B)

Deflection Sensitivity: 5 mV/cm to 10 V/cm calibrated in 1-2-5 sequence in 11 steps; accuracy within $\pm 5\%$; uncalibrated continuous control between steps

Bandwidth

DC Coupled: DC to 15 MHz (-3 dB)
AC Coupled: 2 Hz to 15 MHz (-3 dB)

Rise Time: 24 nsec

Overshoot: 5% or less

Input Impedance: 1 M Ω , 35 pF

Maximum Input: 500 V (DC + AC peak)

Display Modes: CH A only, CH B only, CH A and B (chopped at 1 msec/cm and slower sweeps, alternated for faster speeds), add (A + B), CH B invert (A-B)

Chop Frequency: 200 KHz

HORIZONTAL AMPLIFIER

(Input through CH B)

Bandwidth (at -3 dB):

DC Coupled: DC to 1.5 MHz

AC Coupled: 2 Hz to 1.5 MHz

Input Impedance: 1 M Ω shunted by 35 pF

Maximum Input: 500 V (DC + AC peak)

Deflection Sensitivity: 5 mV/cm to 10 V/cm calibrated in 1-2-5 sequence in 11 steps; accuracy within $\pm 5\%$ of full screen deflection; uncalibrated continuous control between steps

CALIBRATION VOLTAGE

0.5 V P-P $\pm 1\%$, square-wave, 1 KHz approx.

HORIZONTAL SWEEP RANGES

Time/cm (20 Ranges): 0.2 μ sec/cm to 0.5 sec/cm ($\pm 5\%$) calibrated to 1-2-5 sequence in 20 steps; uncalibrated continuous control between steps

TV-H: 12.7 μ sec/cm

TV-V: 3.33 msec/cm

VITS: 0.1 msec/cm

Magnifier: X5 expands the fastest sweep speed, from 0.2 μ sec/cm to 40 nsec/cm

TRIGGERING

Source: External, CH A, CH B

Mode: Normal and automatic

Coupling: AC

Slope: Positive and negative

Sensitivities: Internal (CH A or CH B):

0.5 cm P-P from 10 Hz to 10 MHz; 1 cm P-P from 3 Hz to 15 MHz. **External:** 0.5 V P-P from 3 Hz to 15 MHz. **Auto:** 0.5 cm P-P from 50 Hz to 15 MHz. **TV Sync:** 0.5 cm P-P of deflection

CRT

Type: 130 BHB31

Screen Size: 5" round flat face

Display Area: 8 x 10 cm

Screen Phosphor: P31 blue

ENVIRONMENT

Operating Temperature: 0° to +45°C

Vibration: Meets EIA spec RS 152B

POWER REQUIREMENTS

AC Voltage: 120 V AC $\pm 10\%$, 220 V AC $\pm 10\%$ or 240 V AC $\pm 10\%$

Frequency: 50 to 60 Hz

Average Power Consumption: 45 VA

Fuse Ratings: 1 ampere 125 V 3 AG slow-blow (120 V operation)

Weight: 20 lbs. (9.0 Kg)

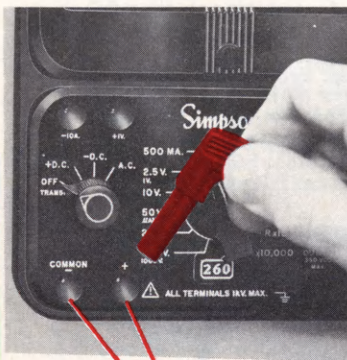
Dimensions: 6½" H x 12" W x 16" D (16.5 x 30.5 x 40.6 cm)

New Simpson

A 260 does many things that even the best general-purpose digital multimeters cannot do . . . or cannot do as well:

- Large, continuous analog display for directly indicating trends and for quick, easy nulling and peaking
- Quick, positive "yes/no" checks for voltage, current and continuity
- Reliable and rapid checks of semiconductor junctions and forward/reverse resistance tests
- High-current, low-resistance range pinpoints marginal bad contacts and cold solder joints
- Wide, dynamic, continuous resistance ranges, not limited by the number of display digits
- Built-in wide-range - 20 to +50 db measurement facilities
- Superior AC frequency response to 100 KHz
- High immunity to voltage transients and rf interference—no expensive chips to wipe out
- Does not generate rf radiation to cause interference or to trigger external sensitive circuits
- Needs no external power, avoids common mode problems
- Fully passive voltage, current and dB tests, independent of any internal or external power source
- Simple design for lowest maintenance costs and highest reliability

The New 260 Series 7 has all of the advancements and circuit protection features for which the Series 6 was famous . . . PLUS MANY NEW ADVANTAGES:



New reverse, recessed, insulated panel connectors with matching safety-engineered test leads



Off/Transit position of the function switch shunts the meter movement and opens internal connections to the common and "+" jacks



Doubly-fused protection network now conveniently located in the directly accessible battery-and-fuse compartment



Custom-molded functionally-engineered test leads feature reverse-type elbow connectors, plus test prods with a ribbed finger grip behind a safety barrier. Matching insulated alligator clips are included.

260[®] Series 7



260-7M



260-7RT



260-7MRT



260-7P



260-7PM



260-7PRT

Choose the 260 VOM that's best for you

Complete with batteries, color-coded test probe leads with screw-on clips and instruction manual.

260-7 (varistor protected meter) #12268. \$114.00

260-7M (with mirror scale) #12269. . . . 119.00

260-7RT (in roll-top protective case) #12272. 129.00

260-7MRT (mirror scale and roll top case) #12273. 134.00

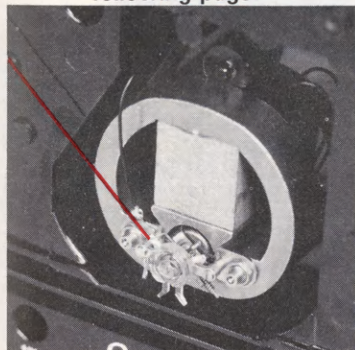
260-7P (relay overload protected) #12274. 162.00

260-7PM (relay overload protected with mirror scale) #12277. 167.00

260-7PRT (relay overload protected in roll top case) #12279. 177.00

260-7PMRT (relay overload protected with mirror scale and roll top case) #12276. . . 182.00

Full ranges, specifications and accessories listed on following page.



All 260 Series 7 VOMs employ the Simpson varistor overload-protected taut-band suspension meter movement. All "P" versions include the additional Simpson overload relay circuit protection system.



A wide selection of optional accessory equipment extends functions and scope of measurement capabilities of each 260 Series 7. Carrying cases, high voltage probes, clamp ammeter attachment, °F-°C temperature probe, low-power ohms probe.

For the Special Needs of Solid-State Circuitry Measurements . . . the

260-6XL

And ⁴/₄ Listed!



X for Extra Ranges, Extra Features

L for Low-Power Ohms Ranges

260-6XL

EXTRA FEATURES

Extra large viewing area with four-color, color-keyed scales
Extra drop-resistant, high-impact custom-molded panel and case

EXTRA RANGES

DC Volts: 0-25 and 0-100

RX1K (6,000 Ω center scale)

AC Volts: 0-25 and 0-100

RX10K (60,000 Ω center scale)

DC Milliamperes: 0-5 and 0-50

DC Amperes: 0-5 (250 mV drop)

Low-Power Resistance:

dB Scale: -1 to +29 and +11 to +41 (1 mW 600 Ω Reference)

RX1 (20 Ω center scale)

RX10 (200 Ω center scale)

Standard Resistance:

RX1 (6 Ω center scale)

RX100 (600 Ω center scale)

Max. open circuit voltage only 100 mV. Max. measuring power only 0.125 mW

Simpson developed the 260-6XL to answer the need for a volt-ohm-milliammeter with extra features including drop resistant construction, low-power ohms and additional voltage, current and resistance ranges. It has an extra large viewing area, 4-color, color-keyed scales and 33 measuring ranges plus all of the deluxe features of the famous 260.



260-6XLM



260-6XLP

Complete with batteries, color-coded test probe leads with screw-on clips and instruction manual.

260-6XL, Cat. No. 12205. \$134.00

260-6XLM with mirror scale, Catalog No. 12206. 139.00

And the Circuit Overload-Protected 260-6XLP

Reset pushbutton releases when overload occurs. Will not reset until overload condition is eliminated.

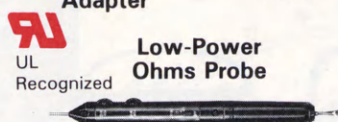
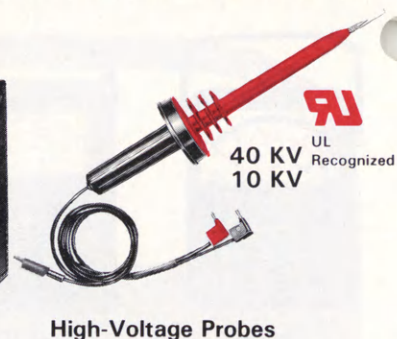
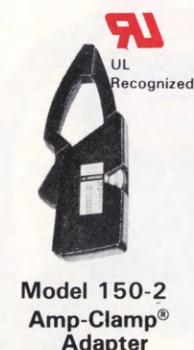
260-6XLP, Cat. No. 12207. \$183.00

260-6XLPM with mirror scale, Catalog No. 12211. 188.00

Simpson® 260® VOLT-OHM-MILLIAMMETERS

260® FAMILY ACCESSORIES expand the versatility of your Simpson 250, 255, 260 or 270 VOM

Accessory	For Series		Price
	3, 4, 5, 6	7	
Temperature Probe	00758	00758	\$115.75
Model 150-2 Amp-Clamp Adapter (Pg. 44)	00541	00545	48.25
40 KV DC Probe	00168	00411	40.00
10 KV DC Probe	00034	00412	40.00
10 KV AC Probe	00036	00413	40.00
5 KV DC Probe	00795	00795	13.75
5 KV AC Probe	00794	00794	13.75
Low power ohms Probe	00735	00414	51.25
Extra Test Leads with screw-on clips	00125	00043	9.00
Extra Probe Tip Leads	07538	—	7.75
Alligator clip Leads	07500	—	7.00
Roll Top Case (00249 for -3, -4, -5)	00248	00248	25.75
Leatherette Case with storage space	00549	00549	38.75
Molded Top Hinged Case	00812	00812	34.25
Leatherette Every-Redy Hard Case—drop front	00805	00805	34.25
Vinyl Sheath Case	01818	01818	28.00
Molded Snap-on Front Dust Cover (Pkg. 10*)	02163*	02163*	30.50
Model 151-2 Line Splitter	00544	00544	12.50



260® FAMILY RANGES, ACCURACIES AND SPECIFICATIONS

RANGES	250	255	260-7, 260-7M, 260-7RT, 260-7MRT, 260-7P, 260-7PM, 260-7PRT	260-6XL, 260-6XLM, 260-6XLP, 260-6XLPM	270-5
DC Volts	0-0.050; 0-0.250; 0-2.5; 0-10; 0-50; 0-250; 0-500; 0-1000	0-0.050; 0-0.250; 0-1; 0-2.5; 0-10; 0-50; 0-250; 0-1000	0-250; 0-1; 0-2.5; 0-10; 0-50; 0-250; 0-500; 0-1000	0-0.250; 0-1; 0-2.5; 0-10; 0-25; 0-100; 0-250; 0-500; 0-1000	0-0.250; 0-1; 0-2.5; 0-10; 0-50; 0-250; 0-500; 0-1000
AC Volts	0-2.5; 0-10; 0-50; 0-250; 0-500; 0-1000	0-2.5; 0-10; 0-50; 0-250; 0-1000	0-2.5; 0-10; 0-50; 0-250; 0-500; 0-1000	0-2.5; 0-10; 0-25; 0-100; 0-250; 0-500; 0-1000	0-2.5; 0-10; 0-50; 0-250; 0-500; 0-1000
DC Microamperes	0-50 (both 50 and 250 mV drop)			0-50 (250 mV drop)	
DC Milliamperes	0-1; 0-10; 0-100; 0-500 (50 mV drop)		0-1; 0-10; 0-100; 0-500 (250; 250; 280; 400 mV drop)	0-0.5; 0-5 (250 mV drop); 0-50 (252 mV drop); 0-500 (400 mV drop)	0-1; 0-10; 1-100; 0-500 (250; 250; 280; 400 mV drop)
DC Amperes	0-10 (50 mV drop)	None	0-10 (250 mV drop)	0-5 (250 mV drop)	0-10 (250 mV drop)
AC Amperes	Up to 250 AC amps with optional Amp-Clamp adapter, Model 150-2				
db Scale (1 mW 600Ω)	-20 to +10; -8 to +22; +6 to +36; +20 to +50	None	-20 to +10; -8 to +22; +6 to +36; +20 to +50	-20 to +10; -9 to +21; -1 to +29; +11 to +41; +19 to +49	-20 to +10; -8 to +22; +6 to +36; +20 to +50
Output	None				
Conventional Resistance	RX1, 0-2000 Ω (12 Ω center); R100, 0-200 KΩ (1200 Ω center); RX10K, 0-20 MΩ (120 KΩ center)			RX1, 0-1K (6 Ω center); RX100, 0-100K (600 Ω center); RX1K, 0-1M (6 KΩ center); RX10K, 0-10M (60 KΩ center)	RX1, 0-2000 Ω (12 Ω center); RX100, 0-200 KΩ (1200 Ω center); RX10K, 0-20 MΩ (120 KΩ center)
Low-Power Resistance	None		None	RX1 (L.P.) 0-1K (20 Ω center); RX10 (L.P.) 0-10K (200 Ω center)	None
Temperature	None	+100°F to +1050°F	None	None	None

ACCURACIES	250	255	260-7, 260-7RT	260-7M, 260-7MRT	260-7P, 260-7PM, †† 260-7PRT	260-6XL, 260-6XLM††	260-6XLP, 260-6XLPM††	270-5
0-50 mV; 0-250 mV 0-1 to 0-1000 V DC	+2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	±1.25% F.S.
0-50 μA	±1% F.S.		±1.5% F.S.					±0.75% F.S.
0-0.5 mA to 0-10 A DC	—	—	—	—	—	±2% F.S.	±2% F.S.	—
0-1 mA to 0-10 A DC	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	±2% F.S.	—	—	±1.25% F.S.
RX1 (L.P.); RX10 (L.P.)	—	—	—	—	—	±2.5° of arc	±2.5° of arc	—
RX1 Conventional	±2.5° of arc	2.5° of arc	2.5° of arc	±2.5° of arc	±2.5° of arc	±2.5° of arc	±2.5° of arc	±1.5° of arc
RX100 Conventional	—	—	—	—	—	±2.0° of arc	±2.0° of arc	—
RX10,000 Conventional	±2.0° of arc	±2.0° of arc	±2.0° of arc	±2.0° of arc	±2.0° of arc	±2.0° of arc	±2.0° of arc	±1.0° of arc
0-2.5 to 0-1000 V AC	±3% F.S.	±3% F.S.	±3% F.S.	±3% F.S.	±3% F.S.	±3% F.S.	±3% F.S.	±2% F.S.

GENERAL SPECIFICATIONS

Input Impedance	All 20,000 Ω/V DC, 5,000 Ω/V AC							
Movement Type	All Taut-Band Self-Shielding Annular Type Movements							
Amp-Clamp Direct Reading Scales	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Movement Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Resettable Circuit Protection	No†	No†	No†	No†	Yes**	No	Yes**	No†
Mirror Scale	No	No	No	Yes	No	No	No	Yes
Scale Length	All 4.2" scale							
Dimensions	All 5-1/4 x 7 x 3-1/8"							
Weight	All approximately 3 lbs.							

* **Except on 500 V AC/DC, 1000 V AC/DC, and DC amps

† Amp fuse limits maximum current

†† Has mirror scale

* Available in single units or in quantity at distributors.

Simpson® Volt-Ohm-Milliammeters



MODEL 270-5 EXTRA-HIGH ACCURACY VOLT-OHM-MILLIAMMETER

- Excellent repeatability
- Greater accuracy over a wide temperature range
- DC V accuracy: $\pm 1.25\%$ F.S.
- AC V accuracy: $\pm 2\%$ F.S.
- Resistance accuracy: $\pm 1\frac{1}{2}^\circ$ of arc

Model 270-5 includes all of the popular features of the world famous 260-7M* including a mirrored scale and knife-edge pointer, varistor-protected self-shielding taut-band movement, external-access battery compartment and Adjust-A-Vue handle.

In addition, special calibration circuits and components are combined with Simpson's regular, strict manufacturing controls. The result is an instrument with proven dependability and ruggedness, plus the higher accuracy necessary for production and laboratory applications.

Complete with batteries, test leads and manual.

Model 270-5, Cat. No. 12226 . . . \$139.00

Model 270-5RT in roll-top protective case, Cat. No. 12227 . . . \$155.00



MODEL 255 VOM WITH TEMPERATURE RANGE

Designed by Simpson to meet the specific needs of servicemen in the gas and electric heating and appliance fields. Has temperature range of $+100^\circ\text{F}$ to $+1050^\circ\text{F}$. Low millivolt drop on DC current ranges for servicing new solid-state controls.

Complete with operator's manual, color-coded test leads with screw-on clips, 5-ft. I/C thermocouple lead, and batteries.

Model 255 VOM, Cat. No. 12155 . . . \$147.00

Special Carrying Case for 255, Cat. No. 00549 . . . 38.75

Probe Case, snaps onto above carrying case, Cat. No. 00574 . . . 11.75

Extra Thermocouple Lead, Cat. No. 00163 . . . 14.00



255



150-2



0549 Case



151-2

COMBINATION APPLIANCE TESTING PACKAGE Case free with Models 255, 150-2 Amp-Clamp and 151-2 Line Splitter

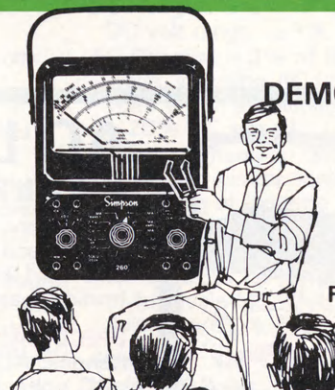
Versatile appliance testing in a convenient package. Purchase the 255 VOM with 150-2 Amp-Clamp adapter and 151-2 line splitter and you get a rugged #00549 case that carries the VOM, Amp-Clamp, splitter and test leads.

No. 12156 . . . \$199.00

MODEL 250 VOM WITH 50 mV DROP For solid-state circuit testing

Makes testing new solid-state circuits easier. Has 1-ampere fused input, self-shielding varistor-protected movement and Adjust-A-Vue handle which folds to use as a stand. Plus modified range coverage and 50 millivolt drop on DC current ranges . . . specifically for solid-state circuits. Rugged taut-band movement.

Catalog No. 12158 . . . \$126.00
Carrying Case, Cat. No. 00812 . . . 34.25



ED-3 VOM DEMONSTRATOR

Special Offer:
Free demonstrator with purchase of 10 Simpson 260® VOMs

22" x 30" blow-up of the 260® VOM* for classroom demonstrations. Switches operate and a "Zero Ohms" knob moves the dial pointer to any scale division.

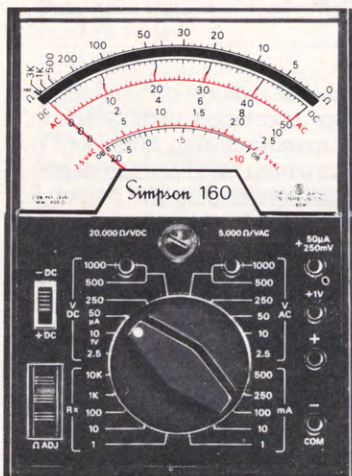
Catalog No. 12630 . . . Separately \$33.35

When you order any 10 Simpson 260 family VOMs (in one order), advise your distributor that you want our free ED-3 offer.

*For Complete Specifications and Accessories, see Page 42.

Simpson® Compact Handi-VOM

160® HANDI-VOM— Drop and Shock Resistant Meter



Only 3-5/16" wide. 12 ounces in weight, yet has the $\pm 2\%$ DC and $\pm 3\%$ AC accuracy and sensitivity of a full size VOM. The self-shielding taut-band movement features outstanding repeatability and freedom from stray magnetic fields. And the meter movement is varistor protected. Built for today's VOM needs, including solid-state circuit testing, the 160 has a 0.25 V DC range. Complete with probe tip test leads, batteries and operator's manual.

160 Handi-VOM,
Catalog No. 12271 **\$98.00**
Leatherette Carrying Case,
Catalog No. 02225 **21.50**
Soft Vinyl Carrying Case,
Catalog No. 02935 **10.25**
Molded Hard Case,
Catalog No. 02929 **35.25**

SPECIFICATIONS	
Ranges—DC Volts	0-0.25, 1.0, 2.5, 10, 50, 250, 500, 1000
AC Volts	0-2.5, 10, 50, 250, 500, 1000
DC Microamperes	0-50
DC Milliampers	0-1, 10, 100, 250, 500
DB Scale (1 mW into 600 Ω)	-20 to +10, -8 to +22, +6 to +36, +20 to +50
DC Resistance	R X 1 (30 Ω center), R X 10, R X 100, R X 1K, R X 10K
Accuracy—DC	$\pm 2\%$
AC	$\pm 3\%$
Sensitivity—DC	20,000 Ω /volt
AC	5,000 Ω /volt
Movement Type	Taut-Band
Scale Length	3.0"
Dimensions	4-9/16" x 3-5/16" x 1-3/4"
Weight	12 ounces

Model 150-2 AC Amp-Clamp Adapter,
Catalog No. 00541 **\$48.25**
Adapter Plug connects Model 150-2 to Model
160 VOM, Catalog No. 02056 **3.75**
Extra Probe Tip Leads, Catalog No. 02055 **6.75**
Extra Alligator Clip Leads, Cat. No. 01927 **6.50**

AMP-CLAMP® ADAPTERS for AC ampere measurements



Model 153-2



Model 154-2



Model 150-2

For
Digital
VOMs



Models 153-2 and 154-2. Plug into digital multimeter. Readout is on 0.2 V, 2 V or 20 V AC VOM scale. Ranges: 2 A, 20 A or 200 A rms. With leads and manual. Accuracy (% of full range): $\pm 3\%$ 20 and 200 A range, $\pm 4\%$ 2 A range.

Model 153-2 for 461, 462, 463 and others with reverse insulated input terminals, Cat. No. 12494 **\$48.25**

Model 154-2 for 360-2, 460-3, 464, 465 and others with banana jack input terminals, Cat. No. 12495 **48.25**

AMP-CLAMP ACCESSORIES
Carrying Case, No. 00548 **15.75**

Extra Test Lead for Model 154, No. 00533 **4.75**

Model 151-2 Line Splitter (see pg. 50), No. 00544 **12.50**

Adapter Test Cord. Adapts 00541 and 12495 to fit reverse jack inputs, Cat. No. 00529 **\$6.00**

For
Analog
VOMs



Model 150-2 Adapter. Clamp-on AC ammeter adapter for analog VOMs having 0-2.5, and 0-3 V AC range. Ranges: 0-5, 10, 25, 50, 100, 250 amps. Readout is on VOM's 0-2.5 V AC scale. When used with 0-3 V AC, ranges are 0-6, 0-12, 0-30, 0-60, 0-120, and 0-300 AC. With leads and instruction manual. Accuracy: $\pm 3\%$ F.S.

For 260 Series 7 and other VOMs with reverse insulated input terminals, Cat. No. 00545 . **\$48.25**

For 260 Series 6 and other VOMs with banana jack input terminals, Cat. No. 00541 **\$48.25**



AC Leakage Current Tester

MODEL 229 SERIES 2 Conforms with ANSI and U.L. Safety Standards

For industry, lab and production. Designed to measure AC leakage current in 120 V and 240 V AC appliances and electrical equipment in accordance with American National Standards Institute Standard C101.1-1973 "Leakage Current for Appliances," and U.L. 1244 "Standard for Electrical and Electronic Measuring and Testing Equipment."

SPECIFICATIONS

Ranges: AC current: 0-0.3-1-3-10 mA

AC voltage: 0-150 and 0-300 volts

Battery Test: Replace—Good

Short Test: Current Red arc: 30 mA F.S.

Green arc: 10 mA or less

Resolution: 5 μ A on 0-0.3 mA range

Accuracy: $\pm 2\%$ at 60 Hz

Input Impedance: Input impedance for current tests is 1500 ohms in parallel with 0.15 mfd

Input Resistance: 0.5 and 1.0 M Ω on the 150 V and 300 V ranges, respectively

Accuracy vs. Frequency: Approximates Dalziel's "Percentile 50 Threshold of Perception Curve within ± 1.0 dB"

Overload Protection: Protected up to 360 V AC momentary on all ranges

Size: 7" x 5-1/4" x 3-1/8" **Weight:** 3 lbs.

Model 229-2, with test leads, battery and operator's manual, Cat. No. 12267 . . **\$165.00**
Leather Carrying Case, Catalog No. 00805 **34.25**

Simpson® Industrial Volt-Ohm-Milliammeters

MODEL 265 INDUSTRIAL VOM

- Single switch operation
- AC and DC currents to 12 amps
- Simultaneous measurements of AC voltage and current

Also measures AC and DC voltages to 600 V. Four resistances (12 Ω center): R X 1, R X 100, R X 1K, R X 10K. Rugged, self-shielded taut-band movement, temperature compensated, provides high resolution and repeatability. Uses same accessories as Simpson 260® family of VOMs. Complete with test leads, batteries and operator's manual.

Model 265, Catalog No. 12184 . \$205.00

Flexible Probe, w/retractable grip-tip, Catalog No. 00118 8.50

40 KV DC Probe, No. 00168 40.00

Model 150-2 Amp-Clamp Adapter, Catalog No. 00541 48.25

Vinyl Ever-Redy Case, No. 00805 . . . 34.25

Vinyl Sheath Case, No. 01818 28.00

Roll Top Case, Catalog No. 00249 . . 25.75

SPECIFICATIONS

DC Voltage	0.3 V, 3 V, 12 V, 60 V, 300 V, 600 V	
Ranges:		
Accuracy:	$\pm 2\%$ F.S.	
Sensitivity:	20,000 Ω/V	
AC Voltage	3 V, 12 V, 60 V, 300 V, 600 V	
Ranges:		
Accuracy:	$\pm 3\%$ F.S.	
Sensitivity:	5000 Ω/V	
DC Current	60 μA , 1.2 mA, 120 mA, 0.6 A, 1.2 A, 12 A	
Ranges:		
Voltage Drop:	250 mV max.	
Accuracy:	$\pm 2\%$ F.S.	
AC Current	Voltage Drop (60 Hz)	
Ranges:	750 mV	
120 mA	65 mV	
1.2 A	50 mV	
12 A		
Ohms	Test Voltage	Test Current
Ranges:		
R X 1	1.5	125 mA
R X 100	1.5	1.25 mA
R X 1K	1.5	125 μA
R X 10K	7.5	72.5 μA



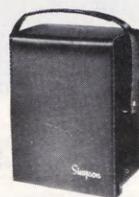
265



150-2



151-2 00549 Case



COMBINATION INDUSTRIAL TESTING PACKAGE

Case free with Model 265, 150-2 Amp-Clamp and 151-2 Line Splitter

Versatile, industrial electrical testing capability in a grab-and-go package. Purchase the Model 265 VOM, 150-2 Amp-Clamp adapter and 151-2 Line Splitter and you get a rugged #00549 carrying case that carries the VOM, Amp-Clamp, Splitter and test leads. Catalog No. 12185 **\$266.00**

MODEL TS-111-2 RAILROAD MULTI-TESTER

- Measure AC-DC current, AC-DC voltage, and resistance—all with one rugged instrument
- Measure percent "on" time of coded track pulses—with readout directly in percentage
- Measure AC voltages—even when AC is superimposed on DC track signals
- Measure resistance—without fear of meter burn-out. Special circuit warns operator if power is present.
- Measure peak current—with no pointer oscillation, no guesswork. Built-in pointer stop is adjustable from the front panel.

RANGES

DC Voltage: 0-0.6, 3, 15, 60, 300 volts (at 1000 Ω/V sensitivity)

AC Voltage: 0-3, 15, 150, 600 volts (at 300 Ω/V sensitivity)

DC Current: 0-15, 60, 300 milliamperes; 0-1.5, 6, 30 amperes

AC Current: 0-3, 30 amperes

Resistance: 0-100 (5 at center scale), 0-10,000 (500 at center scale) ohms

INSERTION LOSS

DC Ranges: 60 millivolt drop (maximum)

AC Ranges: 90 millivolt drop (maximum) on 0-3 amp range; 135 millivolt drop (maximum) on 0-30 amp range. (At 60 Hz sine wave)

Percent "On" Time: 0-100% (for pulses over 30 per minute)

ACCURACIES

DC Ranges: $\pm 2\%$ of full scale (0-3 DC volt range: $\pm 1\%$ of full scale)

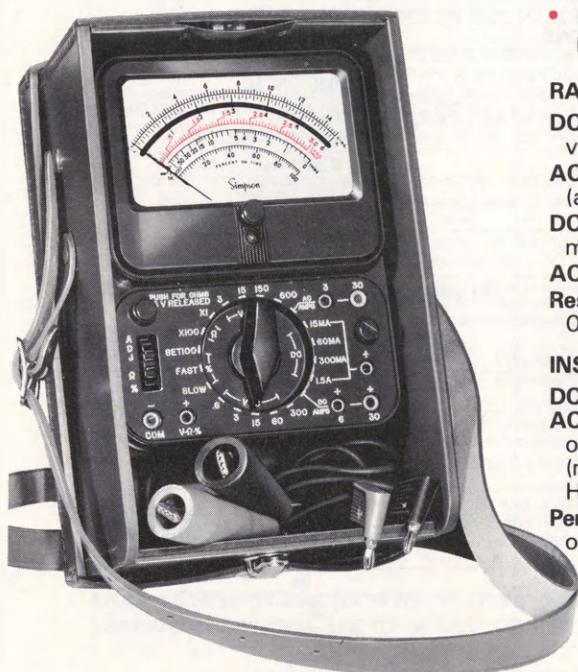
AC Ranges: $\pm 3\%$ of full scale (sine wave, including AC voltages up to 100 volts which are superimposed on up to a 20% DC signal)

Resistance Ranges: Within $\pm 5\%$ of reading at center scale (within $\pm 10\%$ of reading at extreme low and high portions of the scale)

Percent "On" Range: $\pm 2\%$ of full scale for 10-60% (at 30 pulse rate); $\pm 2\%$ of full scale for 10-100% (at 180 pulse rate)

Size: 5 3/4" x 7 1/2" x 4 1/2" (with case)

Weight: 3 3/4 lbs. (with case)

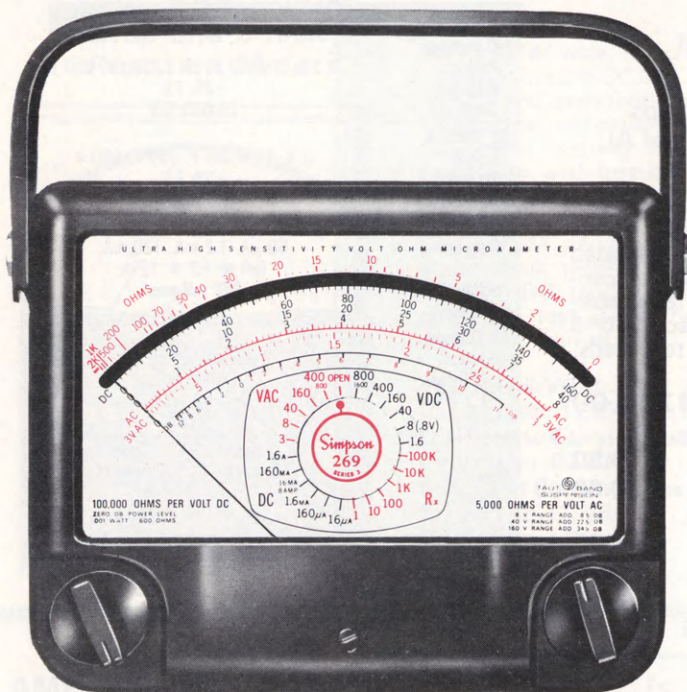


Model TS-111-2, with battery, 5-ft. test leads, leather carrying case and operator's manual, Catalog No. 12159 \$310.00

Replacement Carrying Case, Catalog No. 00719 42.00

Replacement Test Leads, Catalog No. 00236 8.75

Simpson® 7" Scale Volt-Ohm-Milliammeters



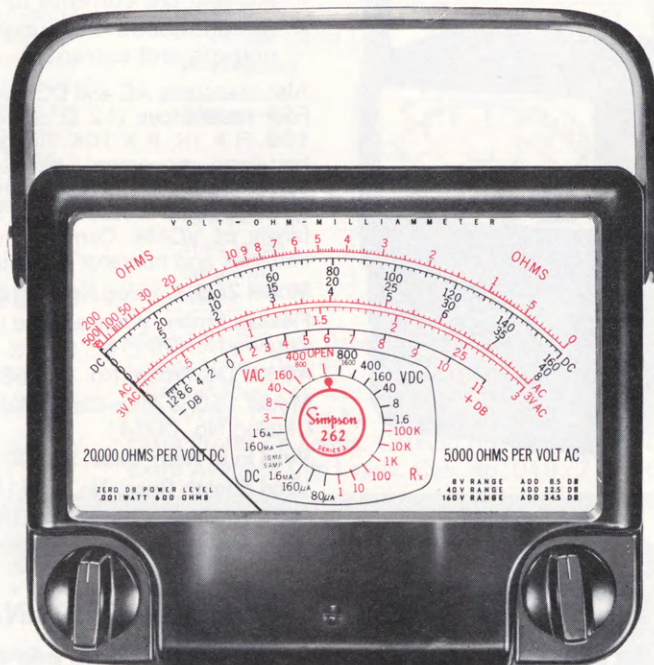
Model 269 Series 3 • 100,000 Ω/V Sensitivity

Now improved! With self-shielding taut-band meter movement that gives better repeatability, plus faster pointer action. This new meter movement is combined with a new mirror scale, and knife-edge pointer, eliminating parallax errors. Large, readable scale is over 6 inches long. Accuracy is $\pm 1\frac{1}{2}\%$ DC and $\pm 2\frac{1}{2}\%$ AC, with new range coverage, too. One switch selects all 27 ranges. Battery replacement is quick and easy with the snap-on compartment. The 269-3 is protected from overloads with a replaceable 1.5 ampere fuse at the input, and a varistor at the meter movement. Complete with No. 00125 test leads, 4000 volt DC probe extension, and operator's manual.

Model 269-3, Catalog No. 12192 \$208.00
40 KV DC Probe, Catalog No. 00066 40.00

SPECIFICATIONS	MODEL 269-3		
	100,000 Ω/V DC 5,000 Ω/V AC		
RANGES:	0-0.8/0-1.6/0-8/0-40/0-160/0-400/0-800/ 0-1600/0-4000*		
DC Volts	0-0.8/0-1.6/0-8/0-40/0-160/0-400/0-800/ 0-1600/0-4000*		
AC Volts	0-3/0-8/0-40/0-160/0-400/0-800		
DC Microamperes	0-16/0-160		
DC Milliamperes	0-1.6/0-16/0-160		
DC Amperes	0-1.6/0-8		
dB Scale (11MW-600)	-12 to +45.5 dB in four ranges		
Output Ranges	External 0.1 mfd. capacitor required where DC is present		
Resistance Ranges	R X 1 0-200 Ω	R X 10 0-20 K Ω	R X 100 0-200 K Ω
	R X 1 K 0-2 M Ω	R X 10 K 0-20 M Ω (12 Ω Center)	R X 100 K 0-200 M Ω
ACCURACIES:			
DC Volts	0-1.6 to 1600 $\pm 1\frac{1}{2}\%$; 0-4000 $\pm 3\frac{1}{2}\%$		
AC Volts	0.3 to 800 $\pm 2\frac{1}{2}\%$		
DC Current	All ranges $\pm 1\frac{1}{2}\%$		
Resistance	$\pm 2\frac{1}{2}\%$ of arc		
Mirror Scale	Yes		
Scale Length	6.2"		
Dimensions	6" x 7 $\frac{1}{4}$ " x 3"		
Net Weight	4 lbs.		

* With probe



Popular Model 262 Series 3

Popular 7" VOM has 34 ranges, movement overload protection and more. See complete specifications below. Complete with No. 00125 test leads, 4000 volt DC probe extension, batteries and manual.

Model 262-3, Catalog No. 12182 \$179.00
40 KV DC Probe, Catalog No. 00121 40.00

CASE for 262 and 269 VOMs

Vinyl Case, Catalog No. 05262 30.50

SPECIFICATIONS	MODEL 262-3		
	20,000 Ω/V DC 5,000 Ω/V AC		
RANGES:	0-1.6/0-8/0-40/0-160/0-400/0-800/0-1600/0-4000*		
DC Volts	0-1.6/0-8/0-40/0-160/0-400/0-800/0-1600/0-4000*		
AC Volts	0-3/0-8/0-40/0-160/0-400/0-800		
DC Microamperes	0-80/0-160		
DC Milliamperes	0-1.6/0-16/0-160		
DC Amperes	0-1.6/0-8		
DB Scale (11MW-600)	-12 to +45.5 dB in four ranges		
Output Ranges	0.1 mfd. capacitor in series with all AC voltage ranges through 160 volts		
Resistance Ranges	R X 1 0-500 Ω	R X 10 0-5000 Ω	R X 100 0-50 K Ω
	R X 1 K 0-500 K Ω	R X 10 K 0-5 M Ω (4.5 Ω Center)	R X 100 K 0-50 M Ω
ACCURACIES:			
DC Volts	$\pm 2\%$ 0-1.6 to 1600 $\pm 3\%$ 0-4000		
AC Volts	$\pm 3\%$		
DC Current	$\pm 2\%$		
Resistance	$\pm 2.5\%$ of arc		
Mirror Scale	No		
Scale Length	6.2"		
Dimensions	6" x 7 $\frac{1}{4}$ " x 3"		
Net Weight	4 lbs.		

* With probe

Compact "Micro-Testers"



Model 372



Model 230-3



Model 362



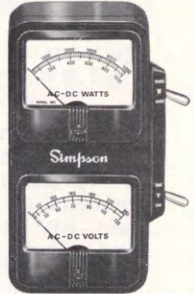
Model 373



Model 379



Model 390-2



Model 392

Compact rugged instruments. Perfect for general and special-purpose in-the-field and laboratory testing and measurement. All have rugged phenolic cases and measure approximately 3 x 5-7/8 x 2-1/2". Weigh 1-1/2 lbs. Micro-Testers not illustrated are similar in appearance to those shown above.

MODEL	DESCRIPTION	RANGES	PRICE
230-3 AC/DC VOM	One of the smallest AC and DC service instruments. Specifically designed for telephone, teletype and marine use. Excellent trouble shooter. Complete with test leads No. 08375 and operator's manual. Catalog No. 12142	1,000 Ohms per Volt AC-DC. Voltage Ranges DC: 10V; 50V; 250V; 500V. AC: 10V; 250V; 500V. Current Ranges: DC: 10 ma; 50 ma; 250 ma. Resistance Ranges: 0-1000Ω, 0-100KΩ. Accuracies: DC volts ± 3% F.S.; AC volts ± 4% F.S.; DC resistance ± 3% of linear arc from absolute value of resistance measured.	\$ 84.00
362-2 Low- Ohmmeter	The two ranges are essentially linear and permit highly accurate readings between 0.1 and 25 ohms. For checking motor armatures; switch and relay contact resistances; shorts between windings and grounds in radio chassis wiring; electrical equipment, etc. Complete with calibrated test leads No. 08376. Catalog No. 12281	Ranges: 0-5, 0-25 ohms Accuracy: ± 3% of linear arc length	77.00
370 AC Ammeter	Ideal for checking small motors, line loads, etc. where AC current measurements are required. 60 Hz. Self-contained current transformer. Catalog No. 12290	Ranges: 0-1, 0-2.5, 0-5, 0-10, 0-25 amperes Accuracy: ± 5% of full scale	74.00
371 AC Voltmeter	Designed primarily for testing line voltages applied to motors, heating equipment and many other industrial applications. Catalog No. 12300	Ranges: 0-150, 0-300, 0-600 volts Accuracy: ± 3% of full scale	74.00
372-2 Ohmmeter	Provides wide range of resistance measurements in a small package. 0.2 ohm to 50 megohms. Ideal for use in schools, on test benches or at inspection facilities. Complete with test leads No. 08375 and operator's manual. Catalog No. 12311	Ranges: 0-500, 0-5000, 0-50,000, 0-500,000 ohms; 0-5, 0-50 megohms. Center Scale: 5, 50, 500, 5,000, 50,000, 500,000 ohms. Accuracy: ± 3° of linear arc length	77.00
373 DC Milliammeter	General purpose tester. Valuable in a number of applications. Provides DC current measurements from .02 to 1000 ma. Catalog No. 12320	Ranges: 0-1, 5, 10, 25, 50, 100, 250, 500, 1000 ma. Accuracy: ± 3% of full scale	74.00
374 DC Microammeter	Can be used with external resistors or multipliers as high sensitivity voltmeter at 20,000 ohms per volt. Can be shorted out of circuit by use of selector knob. Catalog No. 12330	Ranges: 0-50, 100, 250, 500, 1000 micro-amperes. Accuracy: ± 3% of full scale	74.00
375 DC Ammeter	Provides complete range from a fraction of an amp to 25 amps without external shunts. Ideal unit for use with unmetere power supplies. Catalog No. 12340	Ranges: 0-1, 2.5, 5, 10, 25 amperes Accuracy: ± 3% of full scale	74.00
376 AC Voltmeter	Rectifier type, 1000 ohms per volt. Useful in circuits where limited current is present. An excellent output meter when used with proper condenser. Catalog No. 12350	Ranges: 0-5, 10, 25, 50, 100, 250, 500, 1000 AC volts. Accuracy: ± 5% of full scale	74.00
377-2 DC Voltmeter	Resistance, 1000 ohms per volt. Useful in radio servicing and industrial applications. Catalog No. 12361	Ranges: 0-1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 DC volts. Accuracy: ± 3% of full scale	74.00
378 AC Milliammeter	Five separate ranges. Typical applications are transformer vacuum tube tests. Contains current transformer and indicating instruments in one case. Catalog No. 12370	Ranges: 0-5, 25, 100, 250, 1000 ma Accuracies: ± 5% of full scale	74.00
379 Battery Tester	Provides accurate indications of condition of all standard flashlight, hearing aid (mercury cells), radio batteries. Complete with test leads No. 08375 and operator's manual. Catalog No. 12380	Ranges: 0-1.5, 4.5, 6.0, 7.5, 9.0, 15.0, 22.5, 30.0, 45.0, 67.5, 90.0 V Load Resistance: within ± 5%	74.00
390-2 AC Volt-Amp- Wattmeter	The most popular tester for AC/DC volts, AC amps and AC watts with one meter. Rugged... useful for practically any appliance. Complete with break in cord and operator's manual. Catalog No. 12481	AC/DC Volts: 0-150, 300. AC Amps: 0-3, 15. Watts: 0-300, 600, 1500, 3000 Accuracy: ± 5% of full scale	144.00
392 AC/DC Volt- Wattmeter	Simultaneous readings of volts and watts. Has separate meters, built-in cord and plug for connection to line outlet...separate switches for range selection. Supplied with cord, plug, and operator's manual. Catalog No. 12500	5,000 Watts Maximum AC or DC Range Volts: 0-130, 0-260. Watts: 0-1000, 0-5000. Accuracy: ± 3% of full scale, ± 5% of full scale DC volts	144.00

Leather Carrying Case, for all Microtesters except Model 392, Catalog No. 04299 \$21.50
 Leatherette Carrying Case, for all Microtesters including Model 392, Catalog No. 00831 18.75

Simpson® Temperature Testers

MODEL 385-3L TEMPERATURE METER

Three-lead model. Takes temperature readings in three different locations with a simple flick of the selector knob. Ideal for fast, accurate temperature checks from -50°F to $+70^{\circ}\text{F}$ and -45°C to $+21^{\circ}\text{C}$. Lightweight, portable, fits easily in your hand. Standard model has dual scales. Supplied with one No. 00010, 15-ft. lead and thermistor and operator's manual.

Size: 3"x5-7/8"x2-1/2". Wt.: 1-1/2 lbs.
Catalog No. 12420 **\$98.00**

- Range: -50°F to $+70^{\circ}\text{F}$, -45°C to $+21^{\circ}\text{C}$
- Accuracy: $\pm 1^{\circ}\text{F}$ @ center scale, $\pm 2^{\circ}\text{F}$ @ either end

ACCESSORIES

Surface Temperature Probe, #00790. \$21.50
Free Air Temperature Probe, #00789. 27.00
Additional 15-ft. Lead and Thermistor, #00010 23.75
30-ft. Lead and Thermistor, #00216. 23.75
50-ft. Lead and Thermistor, #00415. 25.50
100-ft. Lead and Thermistor, #00416 31.00
150-ft. Lead and Thermistor, #00417 38.75
Ever-Redy Vinyl Carrying Case,
Catalog No. 08073. 23.50



MODEL 387 MILLIVOLTMETER

For testing Furnaces • Boilers • Hot Water Heaters • Dryers • Heaters • Refrigerators

Make gas unit servicing faster, more accurate. Use Simpson's Millivoltmeter. Simply place the probe across the thermocouple terminals and test for the correct value. Checks safety thermocouples on gas-fired units.

Size: 3"x5-7/8"x2-1/2". Wt.: 1 1/2 lbs.
Catalog No. 12440 **\$77.00**

- Range: 0-10, 0-30, 0-100, 0-300, 0-1000 millivolts
- Accuracy: $\pm 3\%$ of full scale

ACCESSORIES

Test Prods and Spade Terminals,
Catalog No. 08379. \$ 7.75
Alligator Clips and Spade Terminals,
Catalog No. 08376 6.50
Ever-Redy Vinyl Carrying Case,
Catalog No. 04299. 21.50



MODEL 388-3L THERM-O-METER

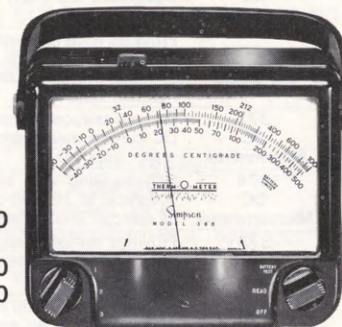
Simpson's popular wide range Therm-O-Meter tester measures the temperature of practically anything within -50°F to $+1000^{\circ}\text{F}$. Standard model has combination $^{\circ}\text{C}$ and $^{\circ}\text{F}$ scale. Sensing Element: Thermocouple (iron-constantan). Supplied with internal battery and one 8' general purpose probe No. 00190 and operator's manual. Order additional probes as required.

Size: 7-15/16" x6"x2-15/16". Wt.: 4 lbs.
Catalog No. 12460 **\$184.00**

- Range: -50°F to $+1000^{\circ}\text{F}$, -40°C to $+500^{\circ}\text{C}$
- Accuracy: $\pm 1\frac{1}{2}$ scale divisions

ACCESSORIES

General Purpose Thermocouple Probe,
Catalog No. 00190. \$20.00
Surface Temperature Probe
(1000°F max.), #00187 25.50
Rugged Service Lead (8 ft.), #00496. 20.00
Ever-Redy Vinyl Carrying Case,
Catalog No. 05262. 30.50



MODEL 389-3L DUAL-RANGE THERM-O-METER

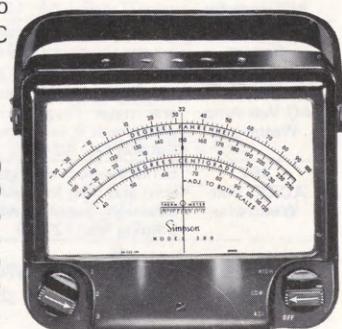
Dual-range three-lead temperature tester. Using three leads, makes temperature readings in three different locations at the same time; i.e., in a refrigerator, one lead could be connected to the evaporator plate, another to the wall of the food compartment and the third in the center of the food compartment. Centigrade and Fahrenheit scale. Supplied with one #00010 15-ft. lead and thermistor and operator's manual.

Size: 7-15/16" x6"x2-15/16". Wt.: 4 lbs.
Catalog No. 12470 **\$173.00**

- Dual Range: -50°F to $+100^{\circ}\text{F}$, -40°C to $+35^{\circ}\text{C}$ and $+100^{\circ}\text{F}$ to $+250^{\circ}\text{F}$, $+40^{\circ}\text{C}$ to $+120^{\circ}\text{C}$
- Accuracy: $\pm 2^{\circ}\text{F}$ center scale, $\pm 3^{\circ}$ at other points

ACCESSORIES

Surface Temperature Probe, #00790. \$21.50
Free Air Temperature Probe, #00789. 27.00
15-ft. Lead and Thermistor, #00010. 23.75
30-ft. Lead and Thermistor, #00216. 23.75
50-ft. Lead and Thermistor, #00415. 25.50
100-ft. Lead and Thermistor, #00416 31.00
150-ft. Lead and Thermistor, #00417 38.75
Ever-Redy Leather Carrying Case,
Catalog No. 05262. 30.50



Simpson® Electronic Volt-Ohm-Milliammeters



MODEL 303-3XL SOLID-STATE FET VOM

A versatile, portable multimeter for field and factory electronic servicing as well as design and components testing. High input impedance, high sensitivity and drift-free performance. Other features include:

- High impact shock-resistant case
- Conventional and low-power ohms selection
- Simplified, easy-to-read dial permits making nearly all measurements on the same scale
- Switch-selectable zero center scale for nulling
- Automatic LED "polarity" and "power on" indicator lights
- Single self-contained rechargeable nickel-cadmium "D" cell (G.E. type GC3 or equiv.) provides up to 20 hours of continuous operation, or VOM can be AC line operated with AC charger/adaptor supplied

SPECIFICATIONS

AC/DC Voltage Ranges: 0.03, 0.1, 0.3, 1.3, 10, 30, 100 and 300. 1000 V AC and 1000 V DC F.S. available through separate jacks

AC/DC Current Ranges: 30 μ A, 1 mA and 30 mA F.S. 1 A, 10 A available through separate jacks

Low-Power and Standard Resistance Ranges: R X 1, R X 10, R X 100, R X 1K, R X 10K, R X 100K, R X 1M; 10 Ω center scale

Decibel (dB) Ranges: -30, -20, -10, 0, +10, +20, +30, +40, +50, +60

Accuracy: $\pm 2\%$ F.S. all DC current and voltage ranges. $\pm 3\%$ all AC current ranges and AC voltage ranges up to 100 V, 50 to 500 Hz; 4% 20 Hz to 20 KHz; 10% 2 Hz to 100 KHz AC. F.S. $\pm 1^\circ$ arc on L.P. ohms

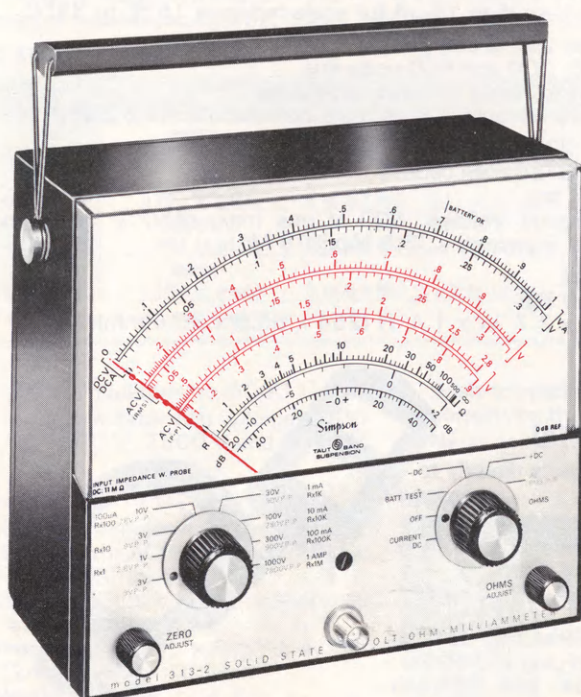
Input Impedance: 10 M Ω DC, 10 M Ω AC shunted by 45 pF

Size: 5.5" x 7.2" x 3.3" (140 x 183 x 84 mm)

Weight: 2.5 lbs. (1.14 Kg)

Model 303-3XL, complete with probe, test leads, battery, AC charger/adaptor and operator's manual. Cases listed on page 15.

120 V AC, Catalog No. 12250	\$289.00
230 V AC, Catalog No. 12251	289.00
40 KV High-Voltage Probe, Catalog No. 00432	49.25
RF Probe, Catalog No. 00433	39.75
Isolation Probe, Catalog No. 00182	34.25
AC Charger/Adaptor for 120 V AC, Catalog No. 12248	31.00
AC Charger/Adaptor for 230 V AC, Catalog No. 12249	31.00



MODEL 313-3 SOLID-STATE FET VOM

11 Megohm DC Input • Battery Operated

Extra high impedance. Operates for 300 hours or more on a single set of batteries. FET-input. All voltage ranges overload protected. Large, easy-to-read 7" scale. Built-in battery test position. Self-shielding movement.

SPECIFICATIONS

Voltage Ranges: DC: 0-0.3, 0-1.0, 0-3.0, 0-10, 0-30, 0-100, 0-300, 0-1000. AC: 0-0.3, 0-1.0, 0-3.0, 0-10, 0-30, 0-100, 0-300, 0-1000 rms, 0-0.9, 0-2.8, 0-9.0, 0-28, 0-90, 0-280, 0-900, 0-2800 V peak-to-peak

Resistance Ranges: R X 1 (10 ohms center), R X 10, R X 100, R X 1K, R X 10K, R X 100K, R X 1M

Current Ranges: DC: 0-0.1 mA, 0-1.0 mA, 0-10 mA, 0-100 mA, 0-1.0 A

Accuracy: $\pm 2\%$ F.S. DC, $\pm 3\%$ F.S. AC

Input Impedance: 11 M Ω DC, 10 M Ω AC

Frequency Response (Probe switch set to AC/ Ω ma): 0.3, 1.0, 3.0 V Ranges: ± 0.5 dB from 20 Hz to 100 KHz; 10, 30, 100 V Ranges: ± 0.5 dB from 20 Hz to 20 KHz; 300, 1000 V Ranges: flat at power line frequencies

Decibel Ranges: -10, 0, +10, +20, +30, +40, +50, +60

Size: 7-3/4" x 6-3/4" x 4-5/8"

Weight: 4-1/3 lbs.

Model 313-3, complete with DC/AC/ Ω probe, batteries, and operator's manual, Catalog No. 12255	\$250.00
Vinyl Case, Catalog No. 00577	33.00
Sponge-Lined Vinyl Case, Catalog No. 01565	38.00
RF Probe, Catalog No. 00191	23.00
40 KV Probe, Catalog No. 00728	40.00
DC/AC Ω Probe, Catalog No. 00189	24.00

Simpson® Amp-Clamp® Testers

Model 296-2
Volt-Ohm-Ammeter



Model 295-2
Volt-Ammeter

Model 294-2
Ammeter

Deluxe Case
No. 02226



Low-Cost Case
No. 02228



Compact balanced-weight instruments for faster testing in motors, relays, transformers and control circuits as well as ordinary power and lighting circuits. Load balance test and AC current measurements are made without equipment shutdown or power line interruption.

- Measure up to 300 amps AC rms without attachments
- Models 295 and 296 also measure up to 600 V AC rms
- Model 296 also measures resistance up to 500 ohms
- Quick, accurate current measurements by simply clamping jaws around one conductor of an AC line
- Current measurements of 2-and 3-wire circuits can be made without disconnecting conductors
- Jaw shape permits easy insertion into crowded wire clusters
- Finger-operated lever locks scale pointer, allowing reading of measurement to be made at some convenient point away from the measuring position, if desired

AMP-CLAMPS FOR 60 HZ • UL Listed

Model 296-2 Volt-Ohm-Ammeter, measures AC current, voltage and resistance. Complete with test leads, one 1.5 V AAA alkaline battery, 1/4-amp type 8AG fuse and spare, and operator's manual, Catalog No. 12493 **\$99.00**

Model 295-2 Volt-Ammeter, measures AC current and voltage. Complete with test leads and operator's manual, No. 12492 . . . **88.00**

Model 294-2 Ammeter, measures AC current. Complete with operator's manual, Catalog No. 12491 **75.00**

AMP-CLAMPS FOR 50 HZ

Model 296-2, Catalog No. 12119 **99.00**

Model 295-2, Catalog No. 12118 **88.00**

Model 294-2, Catalog No. 12117 **75.00**

ACCESSORIES

Low-Cost Black Vinyl Carrying Case, Catalog No. 02228 **10.75**

Deluxe Black Vinyl Carrying Case, Catalog No. 02226 **27.50**

Extra Test Leads, Catalog No. 00041 **5.50**

SPECIFICATIONS

AC Current, Models 294-2, 295-2 and 296-2

Ranges: 0-6, 15, 30, 60, 150, and 300 amperes rms

Accuracy: $\pm 3\%$ of full-scale at 60 Hz sine wave with conductor centered

Temperature Error: Less than 1% of full scale between 15°C to 35°C

AC Voltage, Models 295-2 and 296-2

Ranges: 0-30, 150, 300 and 600 volts rms

Accuracy: $\pm 3\%$ of full scale at 60 Hz sine wave

Temperature Error: 0.5% of full-scale max. between 15°C to 35°C

Resistance, Model 296-2

Range: 0-500 ohms (25 ohm center)

Accuracy: $\pm 3\%$ of arc

Rated Circuit-to-Ground Voltage: 600 V rms max. (850 V peak) per American National Standard, C39.5 (April 1974)

General (All Models)

Weight: 14 oz. (.40 Kg)

Dimensions: 10" L x 2.7" W x 1.4" H (254 x 65.6 x 35.6 mm)

MODEL 151-2 LINE SPLITTER for AC Appliance Testing

- Just plug in appliance and test
- Measures 115 V AC line currents up to 10 amps continuously, 15 amps intermittently, without power interruption
- Provides 10X multiplication for low current measurements

- Appliance ground connects directly to grounded AC socket
- Tough, durable, high-impact resistant housing withstands industrial and heavy-duty maintenance conditions

Makes it easy to perform quick, accurate AC current tests on plug-in appliances such as fans, room air conditioners, washers, dryers, toasters. Has a 3-prong grounded plug and socket, with 2-ft. long cord to splitter. Use with Simpson Models 150, 153, 154, 294, 295 and 296 (Series 1 and 2) Amp-Clamp testers and any other clamp-on unit. Complete with instruction manual, Catalog No. 00544 **\$12.50**



Simpson® Battery-Operated Insulation Testers

These precision instruments are ideal for high-voltage, non-destructive insulation tests on electrical installations, machines, equipment and transformers, and electrical gear on locomotives.

- Tests insulation to 500 V DC
- Measures AC/DC voltage to 600 V
- Tests continuity in low resistance circuits
- Special "Indicator" probe illuminates the measuring point, provides quick visual insulation checkout
- Battery-saver pushbutton operation uses battery only during actual measurements

SPECIFICATIONS

Resistance Ranges:

- (1) 0 to 0.4 MΩ, open circuit voltage 665 V, internal resistance 0.25 MΩ
- (2) 0.01 to 5 MΩ, open circuit voltage 665 V, internal resistance 0.15 MΩ
- (3) 2 to 200 MΩ, open circuit voltage 665 V, internal resistance 0.15 MΩ

Accuracy: ± 1.5% of F.S. length

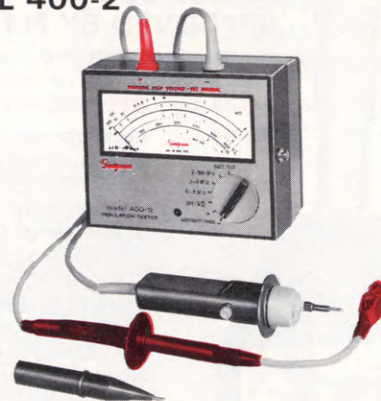
Voltage Range: 0 to 600 V AC/DC
Internal Resistance: Approx. 0.2 MΩ

Continuity Range: 0-4Ω. Open circuit voltage approx. 5 V DC
Supply: Six 1.5 V batteries. Rated voltage 9 V

Dimensions: 5.6" x 4.6" x 3.2" (141 x 117 x 90 mm)

Weight: 3.5 lbs. (1.65 Kg)

MODEL 400-2



Model 400-2 Insulation Tester, complete with batteries, permanently attached three-foot (1 meter) connecting leads (one with illuminating probe, one with plug-in alligator clip), carrying strap and instruction manual, Catalog No. 12509 **\$386.00**
Carrying Case, Catalog No. 01612 . . . **28.25**

- Tests insulation to 1000 V DC
- Four switchable test voltages—neon range selection indication
- Measures AC/DC voltage up to 1000 V
- Makes continuity checks
- Light-up probe illuminates measuring point—provides quick visual insulation checkout
- Same battery-saving push-button operation as Model 400

SPECIFICATIONS

Accuracy: Resistance ranges ± 1.5% F.S. length. Voltage ranges: ± 1.5% F.S.

Supply: Six 1.5 V batteries. Rated voltage 9 V

Continuity testing: Lamp operating point: approx. 500 Ω. Open circuit voltage: approx. 5 V DC

Internal resistance: Approx. 1 KΩ

Number of measurements possible on one set of batteries:

Approx. 5000 measurements on test voltage 1000 V, approx. 9000 measurements on test voltage 500 V

Dimensions: 9.6" x 5.5" x 4.13" (245 x 140 x 105 mm)

Weight: 4.9 lbs. (2.2 Kg)

MODEL 401



Model 401 Insulation Tester, complete with batteries, permanently connected leads (one with illuminating probe, one with alligator clip), carrying strap and operator's manual, Catalog No. 12502 **\$567.00**
Leather Carrying Case, No. 01616 **31.75**
Plug-in Probe Tip, No. 00737 **4.50**

RANGES

TEST VOLTAGE	PROBE LAMP OPERATING POINT	INSULATION RESISTANCE MEASUREMENTS		
		1	2	3
100V (scale X 0.2)	approx. 0.2 MΩ or greater	0 to 0.08 MΩ	0.02 to 1 MΩ	0.4 to 40 MΩ
250 V (scale X 0.5)	approx. .5 MΩ or greater	0 to 0.2 MΩ	0.05 to 2.5 MΩ	1 to 100 MΩ
500V (scale X 1)	approx. 1 MΩ or greater	0 to 0.4 MΩ	0.1 to 5 MΩ	2 to 200 MΩ
1000 V (scale X 2)	approx. 2 MΩ or greater	0 to 0.8 MΩ	0.2 to 10 MΩ	4 to 400 MΩ

*Rated current on all test voltage ranges 1 mA

- Tests insulation to 5000 V DC
- Four selectable test voltages: 500 V, 1000 V, 2500 V and 5000 V
- Push-to-read/lock-on feature conserves the batteries
- Neon scale-selection indicators

SPECIFICATIONS

Accuracy: Megohm ranges: ± 1.5% F.S. length. AC/DC voltage ranges: ± 5% F.S. to 1000 V

Supply: Six 1.5 V batteries. Nominal rated voltage: 9 V

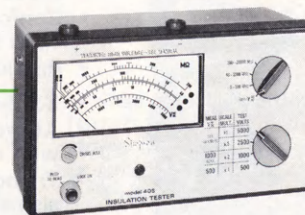
Dimensions: 9.6" x 5.5" x 4.13" (245 x 140 x 105 mm)

Weight: 5.3 lbs. (2.4 Kg)

RANGES

Test Voltage	0-500 MΩ	40-2000 MΩ	200-20000 MΩ
500V (scale X 0.1)	0 to 50 MΩ	4 to 200 MΩ	20 to 2000 MΩ
1000 V (scale X 0.2)	0 to 100 MΩ	8 to 400 MΩ	40 to 4000 MΩ
2500 V (scale X 0.5)	0 to 250 MΩ	20 to 1000 MΩ	100 to 10000 MΩ
5000 V (scale X 1)	0 to 500 MΩ	40 to 2000 MΩ	200 to 20000 MΩ

MODEL 405-2



Model 405-2 Insulation Tester, complete with batteries, two plug-in insulated test leads, probes, carrying strap and operator's manual, Catalog No. 12504 **\$773.00**
Leather Carrying Case, Catalog No. 01616 **31.75**
Extra Test Leads, Cat. No. 00828 **36.00**
Insulated Probe and Alligator Clip, Catalog No. 00829 **23.00**

MODEL 886 TYPE 2 GENERAL-PURPOSE SOUND LEVEL METER

APPROVED BY N.I.O.S.H.* AND M.S.H.A.**

For measurement and analysis of sound over a wide range of frequency and power

SPECIFICATIONS

Microphone:

Type: Condenser Type L size per ANSI S1.12-1967

Impedance: 350 ohms $\pm$ 20% at 23°C

Directional Characteristics: Omnidirectional—angle of incidence approximates a random response equal to 70°

Sound Level Measurement Ranges: 40 dB to 140 dB. Zero (0) dB reference is 0.0002 μ bar

Accuracy: Meets ANSI specifications S1.4-1971 for a Type 2 general purpose sound level meter and IEC 123 specifications

Signal Output: 1.2 volts rms open-circuit, for a full scale meter indication. Source impedance is 620 ohms

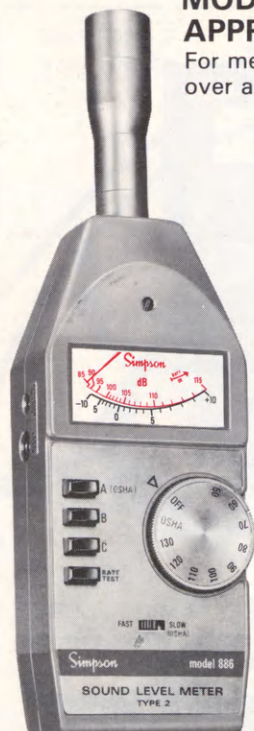
Calibration: Screwdriver adjustable using Model 890 or 896 calibrator (pg. 54)

Power Requirements: Two 9-volt batteries, NEDA 1604, 50 hrs. life approx.

Weight: 1-1/4 lbs. (.57 Kg)

Dimensions (with microphone attached): 0.03" wide x 10.07" high x 1.87" deep (75.7 x 251.7 x 46.7 mm)

- Meets IEC 123 and ANSI S1.4-1971 (R1976) specifications
- Helps you meet OSHA and Walsh-Healy noise control specifications
- Quickly, accurately measures sound levels in factories, offices, stores, theatres, construction sites, studios
- Simple, easy to operate
- Rugged solid-state reliability, battery powered
- Full coverage 40-140 dB, with special 85-115 db OSHA range, fast or slow response and standard A, B and C weightings selection
- Impact-resistant case contoured to minimize sound energy field reflections
- Omnidirectional condenser type L size microphone can be detached for remote use with optional 25-ft. cable
- Operates 50 hours on two 9 V batteries
- AC voltage output jack permits interfacing with recorders, analyzers and other testers
- Two external filter output jacks permit use with Simpson Model 888 Octave Band Filter for noise frequency analysis
- Built-in tripod mount; also accommodates optional safety wrist strap



Model 886 Sound Level Meter, complete with external output plug, 2 batteries and operating instructions. Accessories sold below.

Catalog No. 12620 \$375.00

SOUND LEVEL METER ACCESSORIES

890 Calibrator, Cat. No. 12618.....	\$147.00
896 Calibrator, Cat. No. 12709.....	205.00
Attache Carrying Case, Cat. No. 00217..	56.75
Wrist Strap, Catalog No. 00576.....	5.25
Wind Screen, Catalog No. 00197.....	6.25
Mike Holder, Catalog No. 00184.....	5.75
25-ft. Mike Cable, Catalog No. 00198..	35.00
Microphone Assembly, Cat. No. 00183..	76.75



SPECIAL PACKAGE OFFER

Free attache case (worth \$56.75) with purchase of Model 886 and accessories. Includes Model 886, Model 890 calibrator, microphone wind screen, microphone to tripod adapter, 25-ft. extension cable, three 9 V batteries, calibration adjusting screwdriver, wrist strap and operator's manuals,

886/890 Package,
Cat. No. 12622 \$590.00

MODEL 884 TYPE S2A SOUND LEVEL METER APPROVED BY N.I.O.S.H.* and M.S.H.A.**

A basic instrument for portable sound and noise measurements

- Meets OSHA and Walsh-Healy requirements for noise control
- 50 to 130 dB range
- Conforms to ANSI S1.4-1971 (R1976), Type S2A
- Rugged, high-impact case
- Solid-state construction
- AC voltage output jack permits interfacing with recorders and other testers
- Tripod mounting socket provided which also accommodates safety wrist strap

SPECIFICATIONS

Microphone: Omnidirectional, condenser type L size per ANSI S1.12-1967. **Impedance:** 350 Ω $\pm$ 20% @ 23°C

Accuracy: Meets ANSI specifications S1.4-1971 (R1976) for Type S2A general-purpose sound level meter

Weighting: "A" per ANSI specifications S1.4-1971 (R1976) for Type 2

Ranges: 50 dB to 130 dB. Zero (0) dB reference is 0.0002 μ bar

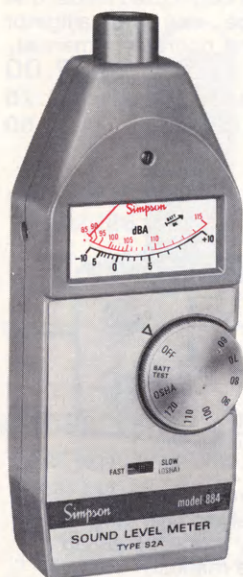
Signal Output: 1.2 volts rms open circuit, F.S. 100 Ω output impedance

Calibration: Screwdriver adjustable using Model 890 or 896 calibrator (pg. 54)

Power: Two 9 V NEDA 1604 batteries, 100 hrs. life approx.

Weight: 13.5 oz. (.35 Kg)

Size: 3.03" W x 8.18" H x 1.87" D (75.7 x 204.5 x 46.7 mm)



Model 884 Sound Level Meter, complete with external output plug, 2 batteries and operator's manual,

Catalog No. 12619 \$276.00



SPECIAL PACKAGE OFFER

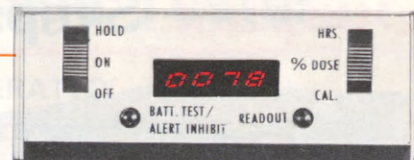
Free attache case (worth \$54.00) with purchase of Model 884 and accessories. Includes Model 884, Model 890 calibrator, microphone wind screen, three 9 V batteries, calibration adjusting screwdriver, wrist strap and operator's manuals,

884/890 Package
Catalog No. 12616 \$423.00

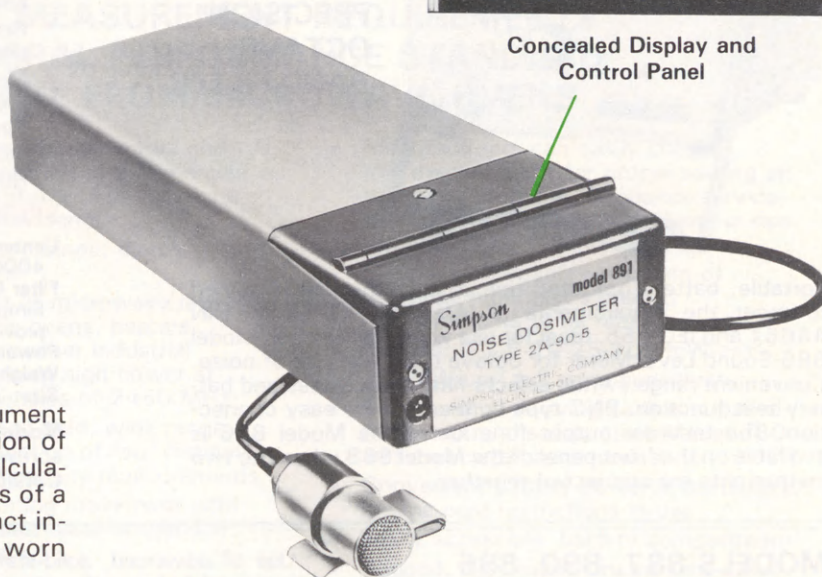
*National Institute of Occupational Safety and Health
**Mine Safety Health Administration

Simpson® Noise Dosimeter

MODELS 891, 891B and 892 PERSONAL NOISE DOSIMETERS



Concealed Display and
Control Panel



Portable, accurate sound measurement instrument designed to allow direct automatic determination of OSHA noise exposure compliance without calculations. This complete dosimeter system consists of a monitor and self-contained readout in a compact instrument that is specifically designed to be worn either in the shirt pocket, or on the belt.

The dosimeter may be used to determine percent noise dosage, elapsed exposure time, and the equivalent continuous noise level over a measurement period. The instrument is battery powered and ruggedly constructed to permit use in virtually any location. The display and control panel is secured under a cover to permit access only to authorized individuals.

The use of advanced, solid-state electronics, careful selection of components and a special Electret condenser microphone insures a stable design of excellent reliability, smooth amplitude and frequency response with relative immunity to normal temperature and humidity changes.

- Automatic computation of percent noise dosage per OSHA or ISO specifications
- Self-contained pocket-size unit
- Rugged 1/2" Electret clip-on microphone
- Concealed readout and controls accessible using supervisor's "key"
- "Hold" memory feature permits temporary interruption or later readout
- Short duration on measurements may be projected to 8-hour or 40-hour dosage
- OSHA model may be recalibrated to meet proposed 85 dB threshold level
- External LED to indicate 100% exposure

SPECIFICATIONS

Microphone: Type M size (0.52" dia.) omnidirectional electret; maximum sound pressure level 148 dB

Sound Threshold Level (Lt): Model 891, 89.5 dBA $\pm$ 0.5 dBA, Model 891B, 79.5 dBA $\pm$ 0.5 dBA, Model 892, 80 dBA $\pm$ 1 dBA

Dynamic Range: Model 891, 90 dBA to 125 dBA; 891B, 80 dBA to 130 dBA per OSHA; Model 892, 80 dBA to 125 dBA per ISO

Reference: 0 dB = 0.0002 μ bar

Accuracy: Both meet accuracy requirements of ANSI S1.25-1978

Max. Dose Accumulation: 9999%

115 dBA Memory: Activated by sound levels exceeding 115 dBA. All decimal points flash.

Calibration: 1000 Hz, 114 dB acoustic input (Model 887 calibrator listed on following page)

Elapsed Time: Logs operation time 0-99.99 hours at 36 sec per count (1/100 hour)

Hold: Halts accumulation of dose and time

Dose Readout: 4-digit LED displays 0-9999% dose (100% dose = 90 dBA/8 hours)

Calibration Readout: 4-digit LED displays "0100" with 114 dB, 1000 Hz acoustic input

Power Requirements: One 9 V (NEDA 1604) battery provides more than 80 hrs. @ 8 hrs./day operation

Battery Test: Left-most decimal indicates at least 8-hr. battery life remaining

Size: 6.50" x 2.625" x 1.312" excluding microphone

Weight: 11.5 oz. including battery and microphone

Model 891 Personal Dosimeter, meets NIOSH and MSHA specs, Catalog No. 12607 . . . **\$633.00**

Model 891B Personal Dosimeter, meets OSHA specs, Catalog No. 12612 **633.00**

Model 892 Personal Dosimeter, meets ISO specs, Catalog No. 12608 **633.00**

Attache Carrying Case, Catalog No. 00218 **56.75**

Model 887 Calibrator, Catalog No. 12623 **147.00**



SPECIAL PACKAGE OFFER!

Free attache carrying case (worth \$56.75) with purchase of Model 891 or 892 Dosimeter and Model 887 Calibrator.

891/887 Package, No. 12626 . . . **\$774.00**

891B/887 Package, No. 12633 . . . **774.00**

892/887 Package, No. 12627 . . . **774.00**

Simpson® Simpson Sound Level Accessories



MODEL 888 PRECISION OCTAVE BAND FILTER

- For use with the Simpson Model 886 Sound Level Meter for octave band analysis of noise by direct cable connection, or with other laboratory instruments
- Recorder output and filter input and output jacks provided
- Meets ANSI S1.11-1966 (R1971), DIN45651 and IEC 225 (1966) requirements
- Single-switch control, built-in LED battery test indication
- Rugged, solid-state construction

SPECIFICATIONS

Center Frequencies: 31.5, 63, 125, 250, 500, 1000, 2000, 4000 and 8000 Hz, switch selectable

Filter Gain: 0, +10 dB, +20 dB and bypass provision with Simpson Model 886. 0, +10, +20, +30 dB and by-pass provision for laboratory use only

Power: Two 9 V batteries, 100 hrs. life approx.

Weight: 2.6 lbs.

Size: 7.19" D x 6.01" W x 2.6" H

Model 888 with batteries, calibration adjusting screwdriver, connecting cable and operator's manual, Catalog No. 12617 \$550.00

MODELS 887, 890, 896 SOUND LEVEL CALIBRATORS

- Self-contained hand-size
- Built-in LED battery test indicator



**MODEL 890 for
Sound Level Meters
MODEL 887 for
Dosimeters**

Use of advanced, solid-state electronics, careful choice of components, and a special sound transducer achieve rugged stable design with excellent reliability and immunity to normal temperature and humidity changes.

Model 890 Calibrator for Sound Level Meters

Model 887 Calibrator for Dosimeters

Low priced yet highly accurate, portable sound sources for convenient field calibration of Simpson and other sound level meters and dosimeters. Provide a constant, calibrated sound pressure level of 114 dB (0 dB reference is 20 μ Newtons/mtr².)

Simple to operate. A 3-position slide switch selects power Off/On and battery test functions. In battery test function, a red LED lights to indicate adequate battery voltage.

MODEL 887, 890 SPECIFICATIONS

Acoustical Output: Frequency: 1000 Hz

$\pm 1\%$ **Sound Pressure Level:** 114 dB

± 0.5 dB at reference conditions

Distortion: Less than 1%

Temperature Range: 0 to +50°C

Output Temperature Coefficient: Better than minus 0.05 dB/°C

Relative Humidity: 0-90%

Power: One 9 V battery, NEDA 1604, 35 hours' life approx.

Reference Conditions: 23°C, 760 mm Hg and 30% to 50% relative humidity, 0 dB = 0.0002 μ bar

Weight: 13.5 oz. (.35 Kg) (131 x 50 mm)
Size: 5-1/4" L x 2" W (131 x 50 mm)

Model 890 Calibrator, N.I.O.S.H. and M.S.H.A. approved when calibrating Simpson Models 884 and 886. Also calibrates similar Sound Meters.
Catalog No. 12618 \$147.00

Model 887 Calibrator, M.S.H.A. approved. For calibrating Simpson Models 891, 891B and 892 Personal Dosimeters and similar instruments,
Catalog No. 12623 \$147.00

New Model 896 Multi-Frequency/Level Calibrator

A deluxe, highly accurate, portable instrument for field calibration of Simpson and other sound level meters. Provides constant, calibrated sound pressure levels of 114 dB or 94 dB (0 dB reference 20 μ Pascals) at the microphone of the sound level meter at each of five frequencies: 125, 250, 500, 1000 and 2000 Hz. Provides a convenient method of checking A, B or C weighted responses.

Two controls. A slide switch selects 94 or 114 dB levels. Rotary switch selects from five output frequencies or battery test functions, and has two Off positions for operator convenience. In battery test function, a red LED indicates adequate battery voltage.

MODEL 896 SPECIFICATIONS

Acoustic Outputs: Frequencies: 125, 250, 500, 1000 or 2000 Hz

Sound Pressure Level: 114 dB SPL or 94 dB SPL (Reference: 0 dB = 20 μ Pascals)

Accuracies: Levels (Simpson 884/886 microphone): ± 0.5 dB all frequencies at reference conditions **Frequencies:** $\pm 2\%$ all frequencies

Distortion: Less than 5%

Temperature Range: 0°C to 50°C

Output Temperature Coefficient: Less than minus 0.2 dB/°C

Operating Relative Humidity: 0 to 90%

Power Requirements: One 9-volt battery, NEDA 1604

Battery Life: Approximately 120 hours for 2 hours per day operation. Nominal current drain: 3mA. (Refer to appropriate Manufacturer's data for temperature effects on battery life.)

Reference Conditions: 23°C, 760 mm Hg 30% to 60% relative humidity

Weight: 15 oz. (0.426 kg)

Dimensions: 2" dia. x 5-7/8" length

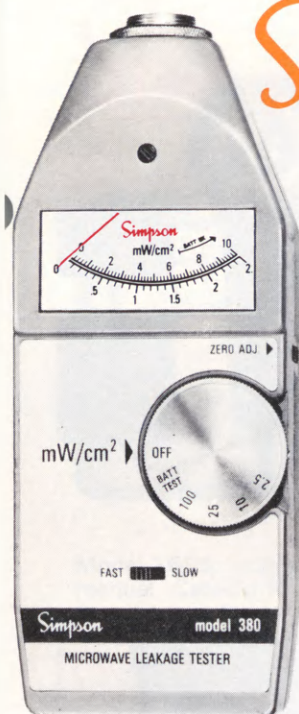
Construction: Aluminum housing with all electronic circuitry on a single printed circuit board.

Model 896 Calibrator, for calibrating Models 884 and 886 Sound Level Meters and other instruments, Catalog No. 12709 \$205.00



**New Model 896
Multi-Frequency
Multi-Level
Calibrator**

Simpson® Microwave Leakage Tester



MODEL 380—Series m BATTERY-OPERATED DIRECT-READING PORTABLE INSTRUMENT MEETS THE MEASUREMENT REQUIREMENTS OF THE FEDERAL PERFORMANCE STANDARD FOR LEAKAGE FROM MICROWAVE OVENS

- For pre-testing by manufacturers and for in-the-field checking of commercial, industrial and institutional installations by professional servicemen
- Completely self-contained, direct reading in mW/cm²
- Measures amount of microwave leakage energy radiated by ovens, heaters, dryers and various other industrial equipment generating high power at microwave frequencies of 2450 MHz
- Non-polarized, hand-held, wide-range probe permits selection of four distinct ranges for power density measurements
- High torque indicating movement with shock resistant, taut-band suspended, moving coil system
- Manufacturers can easily check microwave ovens for proper sealing on the production line. Appliance servicemen can readily test for leakage in customer's home
- Slide switch enables selection of response time best suited to measurements to be made
- Ranges: 0-2.5-10-25-100 mW/cm²
- 2.5 mW/cm² full scale sensitivity
- Durable vinyl carrying case is supplied to protect and safely store Model 380 and associated accessories
- Convenient battery powered portability, no line cord restrictions in use
- Easily accessible battery compartment
- Rugged, high-impact instrument case



Probe attaches to top of instrument



Case Included

Model 380m, complete with probe, foam spacer, two 9 V batteries, operator's manual, all contained in durable vinyl carrying case, Catalog No. 12381 **\$340.00**
Extra Foam Spacer, No. 00781 . . . **19.75**
Extra Carrying Case, No. 00782 . . . **34.25**

SPECIFICATIONS

Calibration Frequency: 2450 MHz $\pm$ 10 MHz
Power Density Reading
Ranges: 0-2.5, 0-10, 0-25, 0-100 mW/cm²
Instrument Accuracy: $\pm$ 1 dB
Instrument Response Time: Fast: 1.2 seconds max. Slow: 3.0 seconds max.
Meter Scales: Linear Scale, two arcs: 0-2.5 and 0-10
Temperature Characteristics:
Normal Operating Range: +10 to +40°C
Temperature Coefficient: $\pm$ 0.057 dB/10°C

Storage Temperature: -40 to +60°C (batteries removed)

Probe Characteristics:

Time Constant: 0.5 sec.
Power Density Range: 0-100 mW/cm²
Overload Rating: 300 mW/cm² max.
Power Requirements: Two 9 volt batteries, NEDA No. 1604, supplied
Battery Life: 400 hours min.
Mechanical Construction: High-impact case, electrically shielded with separate battery compartment
Special Instrument Feature: 1/4-20 threaded insert for tripod mounting
Dimensions:
Instrument: 8.18" L x 3.03" W x 1.87" D (208 x 77 x 47 mm)
Probe: 11" lg. x 3/4" dia. (279 x 19 mm)
Probe Cable: Coiled: 6" (152 mm), Uncoiled: 43" (1092 mm)
Weight: less than 1 lb.

Simpson® 40 KV DC Test Probe-Meter

MODEL 248 HIGH-VOLTAGE TESTER

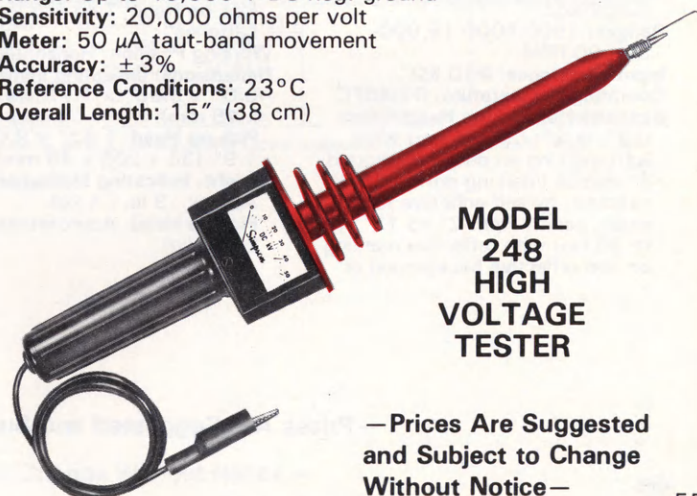
Designed for accurate voltage measurements in low-power high-impedance high-voltage circuits such as TV receivers, video monitors or oscilloscopes

- Measure up to 40 KV DC with 20,000 ohms/volt sensitivity, $\pm$ 3% accuracy
- Direct-reading kilo-volt scale, 50 μ A taut-band meter movement
- Precision high-voltage multiplier resistor is spring suspended and sealed
- Probe tip has spring hook for "hands-off" measurements
- Rugged Noryl thermoplastic probe body, handle and oversize disc barriers provide superior insulation

Model 248 40 KV DC Test Probe-Meter, with operator's manual, Catalog No. 00169 . . . **\$59.00**
Carrying Case, Catalog No. 00804 **14.00**

SPECIFICATIONS

Range: Up to 40,000 V DC neg. ground
Sensitivity: 20,000 ohms per volt
Meter: 50 μ A taut-band movement
Accuracy: $\pm$ 3%
Reference Conditions: 23°C
Overall Length: 15" (38 cm)



MODEL 248 HIGH VOLTAGE TESTER

—Prices Are Suggested and Subject to Change Without Notice—

Simpson® Illumination Level Meter

MODEL 408-2

- Compact, portable unit
- Four ranges provided
- Universal matching to the response of the eye without additional filter
- Carrying case supplied
- Makes luminance measurements using accessory tube
- Can be used as exposure meter
- Operates in any position
- Lightweight



SPECIFICATIONS

Ranges:
 0—15/50/150/500 foot candles;
 0—1500/5000/15000/50000
 foot candles using slip-on X100
 extension filter
Accuracy: $\pm 5\%$, $\pm 8\%$ with X100
 filter, $\pm 9\%$ with luminance tube
Movement: Core magnet moving
 coil, unaffected by stray fields
Light Sensitive Element: 1.6" dia.
 selenium photocell corrected to
 eye response
Spectral Sensitivity: Matched to
 wavelength curve
Cosine Correction: Up to an 85°
 angle of incidence with built-in
 correction lens
Luminance Measurement: (Using
 slip-on X2 tube): **Ranges:** 0 to

30/100/300/1000 cd/ft²
Aperture of Tube: 1.52" dia.
Diameter of Test Area: 1.7 X
 distance
Exposure Meter Table: (For incident
 light measurements from 0.5 up
 to 7400 foot candles): Light
 values for 50 ASA, 0-14 EV @
 f8, 60 sec down to 1/250 sec
 (table is on back of instrument)
Scale: Longest scale arc: 3.125"
 (78mm). Shortest scale arc:
 2.25" (56 mm)
Case: High-impact plastic
Dimensions: 3.62 x 4.96 x 1.77"
 (92 x 126 x 45 mm)
Weight: Less than 1 lb.

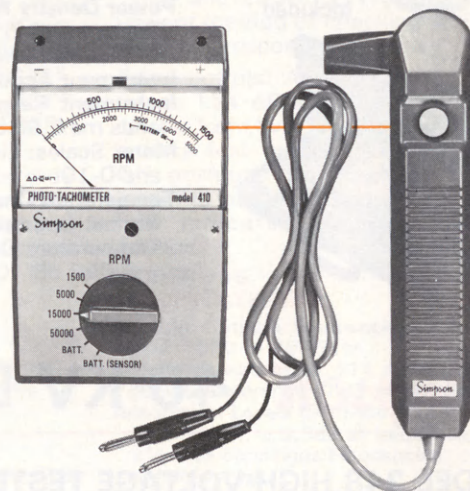
**Model 408-2 Illumination
 Level Meter**, complete
 with remote sensor, X100
 range extension filter, lum-
 inance measurement tube,
 carrying case and instruc-
 tion manual, Catalog
 No. 12632 . . **\$325.00**



Simpson® Photo Tachometer

MODEL 410

- Contactless measurement
- Battery operated
- Four ranges provided
- Measures speeds up to 50,000 RPM
- Lightweight, easy to use



SPECIFICATIONS

Case: High-impact, custom molded
Accuracy: $\pm 2\%$ F.S.
Movement: Core magnet movement
 with spring-loaded pivot
 suspension
Ranges: 1500-5000-15,000-
 50,000 RPM
Input Resistance: ≥ 10 K Ω
Operating Temperature: 0—40°C
Sensitivity of Pick-up Head: From
 0.2" to 2": (.5 to 5 cm) with
 light marking on dark background
 or reverse (marking provided, for
 example, by self-adhesive tape,
 chalk, paint). From 2" to 12": (.5
 to 30 cm) with reflective marking
 on non-reflective background or

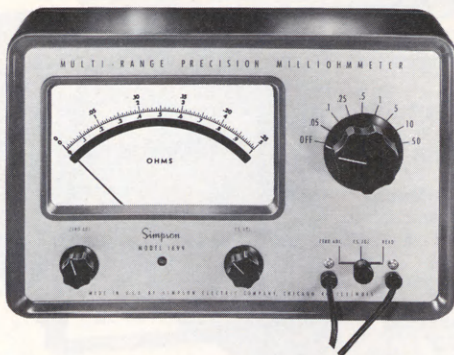
reverse (example: silver, fluo-
 rescent red, mirror paint or tape)
Supply Voltage: Indicating
 Instrument: One 9 V battery
 Pick-up Head: Two 1.5 V
 batteries
Working Position: Horizontal
Dimensions: Indicating Instrument:
 3.6" x 5.98" x 1.77" (92 x 152
 x 45 mm)
 Pick-up Head: 1.42" x 8.0" x
 1.9" (36 x 205 x 48 mm)
Weight: Indicating Instrument:
 Approx. .9 lb. (.4 kg)
 Pick-up Head: Approximately .7
 lb. (.3 kg)

**Model 410 Photo
 Tachometer**, complete
 with batteries, acces-
 sories, vinyl carrying case
 and instruction manual,
 No. 12604 . . **\$341.00**



—Prices Are Suggested and Subject to Change Without Notice—

Simpson® Secondary Standards



Model 1699, with batteries, leads, manual, Catalog No. 13299. **\$410.00**
Spare Kelvin Lead, No. 00156 . . . 11.75

MODEL 1699 MULTI-RANGE PRECISION MILLIOHMMETER

Measures low-resistance values accurately, rapidly, by comparing them to known standard internal resistances. Accuracy is $\pm 1\%$ F.S. even on the 0-0.05 Ω range. No warm-up is needed.

SPECIFICATIONS

Resistance Ranges, Ohms:	0.05	0.1	0.25	0.5	1.0	5.0	10.0	50.0
Max. Current, mA:	460	231	97	47	26.5	5.0	2.7	0.5
Max. Power Dissipation, mW:	7.95	5.16	2.15	1.10	0.694	0.121	0.069	0.012

Sensitivity: 0.001 Ω , smallest scale division

Readout: 7" single arc 90° 100-division mirror scale knife-edge pointer

Power: 2 batteries supplied: one NEDA #11, one NEDA #1604

Transistors: Two, matched pair, 2N2716

Leads: Wired-in Kelvin type clip, supplied

Size: 11-3/8 x 7-3/8 x 3-1/4"

Weight: 5 lbs. 10 oz.



MODEL 880



MODEL 9, 10

LOW-COST SECONDARY STANDARDS

For lab, production, inspection & Q-C application

SPECIFICATIONS

	MODEL 9	MODEL 10	MODEL 880
Parameters	DC Current	AC Voltage	AC/DC Power AC/DC Voltage
Accuracy*	0.5%	1%	1%*
Frequency Response	DC	25-125 Hz	DC and 25-250 Hz
Movement	Self-shielded d'Arsonval	Iron-Vane	Dynamometer
Scale	4.03" arc length; 100° arc	3.63" arc length; 90° arc	3.63" arc length; 90° arc
Voltmeter Sensitivity	100 Ω/V	100 Ω/V	52.5 Ω/V
Size, Weight	5-1/4" x 3-1/2" x 7", 2-1/2 lbs.		

*In horizontal position; temperature compensation per ASA Spec. C39.1-1964

**0.25% used as transfer standard at 60 cycles

MULTI-RANGE UNITS		DC MODEL 9		AC MODEL 10	
		Cat. No.	Price	Cat. No.	Price
VOLTMETERS	150-300-600 V	—	—	13120	\$147.00
AMMETERS	5-20-50 A	12792	\$170.00	—	—
WATTMETERS AC/DC Single Phase	POWER RANGES Single Current				
	MAXIMUM VOLTAGE† 150 V	MAXIMUM VOLTAGE † 300 V	MAXIMUM CURRENT†	AC/DC MODEL 880	
	100 watts	200 watts	1.5 A	13170	156.00
	2000 watts	4000 watts	30 A	13210	165.00
	POWER RANGES Double Current				
	MAXIMUM VOLTAGE† 150 V	MAXIMUM VOLTAGE† 300 V	MAXIMUM CURRENT†		
			LOW SCALE		
250-500 watts	500-1000 watts	3.75 A	7.5 A	13230	194.00
500-1000 watts	1000-2000 watts	7.5 A	15.0 A	13240	194.00

†Maximum current and maximum voltage cannot be used simultaneously. Do not allow product times power factor to exceed full scale of power range in use.

Roll-top Safety Case, for any model above, Catalog No. 06192 \$23.50

VERSATILE 3-3/4" SQUARE PANEL-MOUNT UNITS

Rugged pivot and jewel meter movement for superior shock/vibration capability. Provides 1.5% recording accuracy, 3 chart speeds—60 mm (2.36"), 20 mm (.79") and 10 mm (.39") per hour. Impression rates are 2-6-12 seconds. Fit standard DIN/IEC panel.

Specially formulated pressure sensitive chart paper produces clean, clear trace—does not smudge, fog or blur with age. You get up to 1600 hours' recording time per roll of chart paper. The 2750-2 can be connected for either 120 or 240 volt operation and has standard quick-connect rear terminals.

Catalog numbers shown in **Black** are standard. **Numbers in Orange** are special order ranges.

Ranges	Res. Ohms	Catalog Number	Price	Ranges	Sens.	Catalog Number	Price
0-500 μ A DC	400	22133	\$205.00	0-50 V DC	2000 Ω/V	22138	\$205.00
0-1 mA DC	200	22134		0-100 V DC		22139	
0-5 mA DC	10	22122		0-250 V DC		22140	
0-10 mA DC	5	22123					
0-1 A DC	.05	22124					
0-50 mV DC†	500 Ω/V	22135	205.00	*0-5 A AC	2000 Ω/V	22141	215.00
0-1 V DC	2000 Ω/V	22136		0-10 V AC		22126	
0-5 V DC	2000 Ω/V	22125		0-25 V AC		22127	
0-5 V DC	2000 Ω/V	22125		0-50 V AC		22128	
0-10 V DC	2000 Ω/V	22137		0-150 V AC		22142	
				0-250 V AC		22129	

† Catalog No. 22135, 0-50 Millivolt DC may be used with either portable shunts (from 1 Ampere to 200 Amperes) or switchboard shunts (from 100 Amperes to 3000 Amperes). All shunts are shown on page 21.

* This range is a basic 0-10 Volt AC recorder, but is supplied with a 0-5 Ampere scale already mounted. Requires a Model 186 current transformer (Catalog #01312), see page 21. Other current transformers for up to 50 Amperes with 10 V AC output are also listed. (Matching range scale plates are available.)

† For ranges from 0-50 Amperes to 0-1000 Amperes, order #22141 recorder, plus #01312 transformer, plus appropriate donut transformer from listing on page 21. (Matching range scale plates are available.)

MODEL 2750-2 SINGLE CHANNEL RECORDER

SPECIFICATIONS

Recording Accuracy: $\pm 1.5\%$ of full span

Meter Movement: Rugged pivot and jewel

Response Time: < 2 seconds

Recording Trace: Single channel, 1 impression every 2, 6 or 12 seconds

Chart Paper: Pressure sensitive
Length: 16 meters (52 ft.). Up to 1600 hours' recording
Width: 70 mm (2.76")

Recording Width: 55 mm (2.16")

Markings: 50 divisions standard
Chart Gear Speeds: 60 mm/hour (2.36") is standard. Cams for 10 mm (.39") and 20 mm/hour (.79") are supplied

Rated Circuit-to-Ground

Voltage of the Measuring Circuit: 250 VAC RMS (sinewave) (350 V peak)

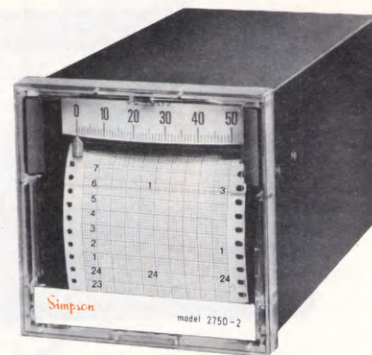
Take-up Reel: Built-in, automatic, motor driven

Operating Temperature: -10°C to $+40^{\circ}\text{C}$

Reference Conditions:

Temperature: $+23^{\circ}\text{C} \pm 1^{\circ}\text{C}$

Relative Humidity: 30 to 60%



Power Requirement: 120/240 V $\pm 10\%$, 60 Hz, 1.6/3.2 V A (50 Hz available on special order)

Meter/Recorder Scale: 60 mm (2.36"). 50 divisions standard

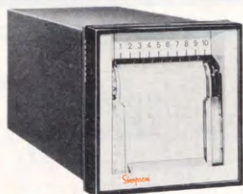
Dimensions: see outline drawings on next page

Front Panel: 96 x 96 mm (3.78 x 3.78") DIN standard

Projection (rear panel): 180 mm (7.09")

Terminals: Standard quick-connects 6.35 mm (.250") x .8 mm (.032")

Net Weight: 1.3 kg (2.9 lbs.)



MODEL 2755 5 AND 10 CHANNEL EVENT RECORDER

Durable, rugged electromechanical instruments for inkless, continuous recording the on/off status (rather than magnitude) of ten separate sources. Inkless, pressure-sensitive chart paper continuously passes the ten recording pens. It is possible to determine from the chart the actual time an event occurred, the duration of time the event lasted and the sequence of events recorded on several channels. Up to 32 days' recording can be made at the 20 mm-per-hour chart speed. Quick selection of two built-in chart speeds, 20/120 mm-per-hour, is provided by slide switch. Interchangeable gearboxes permit speeds to 600/3600 mm-per-hour.

Supplied complete with chart paper, panel mounting bracket, 60" three-wire line cord and operator's manual.

SPECIFICATIONS

Accuracy: 10 millisecond (nominal) pen response

Chart Speeds: (switch selectable) 20/120 mm-per-hour (0.79/4.72 inches-per-hour)

Impression Rate: Continuous

Chart Paper: Pressure-sensitive, 2.6" wide, 50' long

Take-up Reel: Built in. Automatic, motor driven

Motor Drive: Synchronous, 90-160 V AC, 60 Hz, 3 VA

Size: 3-3/4" x 9-1/8" x 3-3/4" **Weight:** 4 lbs. approx.

Input	Power per Solenoid	Cat. No.	Price
10 channels, 6 V DC	1.2 watts	22203	\$425.00
10 channels, 12 V DC		22202	
10 channels, 24 V DC		22201	
10 channels, 115 V AC		22200	
10 channels, 24 V AC	2.2 VA	22204	350.00
5 channels, 115 V AC		22210	
5 channels, 24 V AC		22211	
5 channels, 6 V DC		22212	
5 channels, 12 V DC		22213	
5 channels, 24 V DC		22214	

MODEL 2761 SINGLE CHANNEL, 3-RANGE TEMPERATURE RECORDER

The 2761 is a single channel, 3-range temperature recorder. Range coverage is from -50 to $+250^{\circ}\text{F}$ in 100° spans. The recorder is supplied with individual phono jacks for 3 separate temperature sensors. Inputs and ranges are selected by means of two rear panel 3-position switches. This added capability permits monitoring and recording three separate temperature locations without relocating the sensor. Although the 2761 provides broad range coverage, the individual ranges allow temperature resolution to 1°F at accuracies of $\pm 3^{\circ}$ maximum. The 2761 is supplied with an AC synchronous motor for 115 V, 60 Hz operation. Standard chart speed is 20/120 mm/hr. with a clamp rate of once every 6 seconds. The scale and chart paper are graduated directly in degrees Fahrenheit for all ranges, which allows fast, accurate readings without interpolation.

MODEL 2761, -50° to $+50^{\circ}\text{F}$; $+50^{\circ}$ to $+150^{\circ}\text{F}$; $+150^{\circ}$ to $+250^{\circ}\text{F}$ (3 ranges, switch selectable), complete with chart paper, panel mounting bracket, 60" 3-wire line cord, 1 temperature sensor and operator's manual.

Catalog No. 23151 **\$325.00**

SPECIFICATIONS

Recording:

Dot Impressions on Chart

Paper: Every 6 seconds

Chart Paper Width: 2.56"

Recording Width: 2.32"

Length of Paper on Roll:

50'

Chart Speed: 20 or 120 mm/hr.

Time Imprint: 1-24

Linear Divisions: 50

Running Time at Standard

Chart Speed: 32 days

Meter Movement:

Taut Band Suspension

Response Time: 2 sec.

Sensitivity: $8.4 \mu\text{A}$

Resistance: 1780 ohms

Temperature Measuring:

3 Ranges, switch select-

able: -50° to $+50^{\circ}\text{F}$;

$+50^{\circ}$ to $+150^{\circ}\text{F}$;

$+150^{\circ}$ to $+250^{\circ}\text{F}$

Accuracy Recording: $\pm 3^{\circ}\text{F}$

Sensing: 3 probes, selector

switch, thermistor

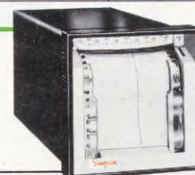
Power Input: 105 to 135

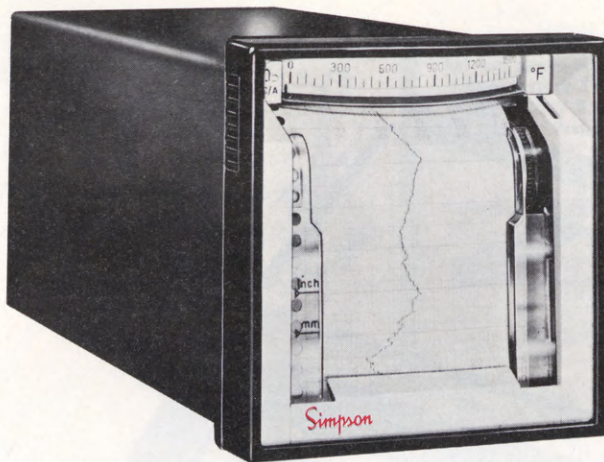
V AC

Frequency: 60 Hz

Power Consumption: 2 VA

Weight: 4-1/2 lbs.





MODEL 2760 SINGLE-RANGE TEMPERATURE RECORDER

These rugged units record for over a month unattended. Inkless, pressure-sensitive paper. Switch-selected chart speeds 20/120 mm/hr. Taut-band movement is temperature compensated. Accuracy is $\pm 1.5\%$ F.S.

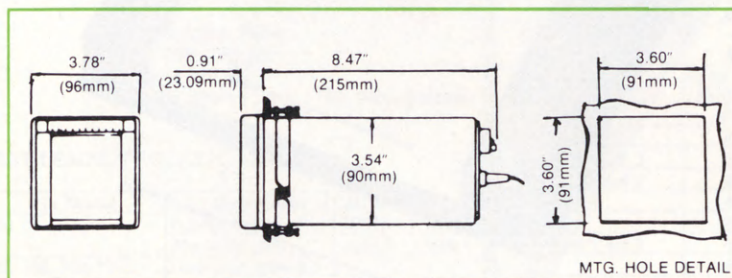
Amplifier input on thermocouple ranges allows 0 to 100 ohms of lead resistance without adjustment.

Ranges	Uses Sensor**	Cat. No.	Price
-60°C to 0°C	Pt-100 Resis. Bulb	23100	\$315.00
0 to +60°C	Pt-100 Resis. Bulb	23102	
0 to +100°F*	Pt-100 Resis. Bulb	23114	
0 to +100°C	Pt-100 Resis. Bulb	23103	\$350.00
0 to +500°F	I/C Thermocouple	23015	
0 to +800°F	I/C Thermocouple	23016	
0 to +1500°F	C/A Thermocouple	23017	
0 to +2500°F	Platinel II	23018	

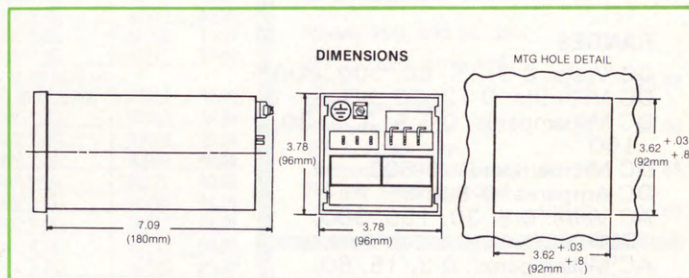
* Supplied with standard 50-division chart paper, Catalog No. 23311

** Sensor not supplied; see below

GENERAL DIMENSIONS
Models 2755, 2760, 2761, 2762



GENERAL DIMENSIONS
Model 2750-2



TEMPERATURE SENSORS

Type	Resis.	Description	Cat. No.	Price
Pt-100 Resis. Bulb	100 Ω	Stainless, 0.187 X 5.0", 10' leads	23235	\$61.40
I/C Thermocouple	10 Ω	Stainless, 0.187 X 5.0", 10' leads	23245	36.75
I/C Thermocouple	10 Ω	Stainless overbraid, 235", 20 ga.	21224	56.55
I/C Thermocouple	10 Ω	Glass cloth overbraid, 34", 30 ga.	21223	9.65
I/C Thermocouple	10 Ω	Glass cloth overbraid, 137", 24 ga.	21222	11.50
C/A Thermocouple	10 Ω	Stainless, 0.187 X 5.0", 10' leads	23246	36.75

ACCESSORIES For Models 2750-2, 2755, 2760, 2761 and 2762

Item	Cat. No.	Price
Portable carrying handle	22392	\$38.80
Plastic window for direct paper feedout*	22395	9.25
Line cord, 3 wire, 60", w/pigtail terminal	22394	8.10
Line cord, 3 wire, 60", w/117 V AC ground plug	22393	9.00
Gear unit for 20/120 mm/hr. speeds	22300	35.85
Gear unit for 30/180 mm/hr. speeds	22301	52.40
Gear unit for 60/360 mm/hr. speeds	22302	52.40
Gear unit for 100/600 mm/hr. speeds	22303	52.40
Gear unit for 300/1800 mm/hr. speeds††	22304	79.85
Gear unit for 600/3600 mm/hr. speeds††	22305	79.85
Free air temp. probe (for 2761, 2762)	00789	27.00
Surface temp. probe (for 2761, 2762)	00790	21.50
15' Lead and thermistor (for 2761, 2762)	00010	23.75
30' Lead and thermistor (for 2761, 2762)	00216	23.75
50' Lead and thermistor (for 2761, 2762)	00415	25.50
100' Lead and thermistor (for 2761, 2762)	00416	31.00
150' Lead and thermistor (for 2761, 2762)	00417	38.75

* Not available for 2755

†† For 2755 only

CHART PAPER For Models 2750-2, 2755, 2760, 2761,

SERIES	CALIBRATION		Cat. No.	Price/10 Roll Box
	Speed	Division		
2750-2	—	30 div. 50 div.	22155 22156	\$34.95
2755	20 mm/hr. 30 mm/hr. 60 mm/hr. 100 mm/hr.		22380 22381 22382 22383	36.70
2760	PLATINUM RESISTANCE			
	20 mm/hr.	60°C	23200	34.95
		100°C	23201	36.70
		150/300°C	23202	36.70
		200/400°C	23203	36.70
	30 mm/hr.	60°C	23204	36.70
		100°C	23205	
		150/300°C	23206	
		200/400°C	23207	
	THERMOCOUPLE TYPE			
20 mm/hr.	0-500°F	23248	36.70	
20 mm/hr.	0-800°F	23249		
20 mm/hr.	0-1500°F	23250		
20 mm/hr.	0-2500°F	23251		
2761	20 mm/hr. 30 mm/hr.		23237 23238	36.70

Simpson® Multi-Range Chart Recorders

MODEL 605-2 MULTicorder®

- 24 switch-selectable ranges
- Permanent, inkless recording of both range and measured value
- 3 built-in chart speeds
- Rugged, high torque taut-band movement for extremely accurate recording and readout

RANGES

DC Volts: 0-3, 15, 60, 300, 600

DC Millivolts: 0-12, 30, 60

DC Milliamperes: 0-1.5, 3, 6, 30, 150

DC Microamperes: 0-600

DC Amperes: 0-1.2, 6

AC Volts: 0-6, 30, 150, 300, 600

AC Milliamperes: 0-3, 15, 60, 300

AC Amperes: 0-1.2, 6

Model 605-2, complete with test leads, 2 rolls of chart paper and instructions for 120 V AC operation, Cat. No. 12613 **\$520.00**

Model 605-2, same as above, except battery operation, Cat. No. 12614 **619.00**



SPECIFICATIONS

	605-2
Recording accuracy	±2.5% F.S.
Indication accuracy	±1.5% F.S.
Chart speeds	1, 3, 12 in./hr.; 25, 76, 305 mm/hr.
Impression rate	1 or 2 sec selectable
Chart drive: synchr.	120 V AC, 60 Hz (DC motor on battery model)
Size	9.75" x 4.75" x 4.0"
Weight	5-1/2 lbs.

CHART PAPER*

Division Calibration	Box Qty.	Catalog Number	Price per Box
50, for 604	10 rolls	02612	43.40
30, for 605		02614	43.40

* Pressure-sensitive, 2.6" wide, 50' long for Models 604, 605

ACCESSORIES

Description	For Model	Cat. No.	Price
Test leads	604,605	07500	\$ 7.00
Carrying case, vinyl	604,605	02616	56.60
Gear unit, 30/60/90 in./hr.	604,605	22307	93.15
Shunt, 20, 10, 5 DC amps	604 only	06526	64.80
Shunt, 0-100 DC amps	604 }	06531	88.65
Shunt, 0-12, 30, 60 DC amps	605 }		
Shunt, 0-120, 300, 600 DC amps	605 only	06529	144.75
Current transformer*, 0-30, 120, 600 AC amps (±3%, 45-65 Hz)	605 only	02461	90.60
(±1% 45-65 Hz)	605 only	02462	162.75
Current transformer*, 0-30, 120, 600, 1200 AC amps (±3%, 45-65 Hz)	605 only	02463	247.45
Thermocouple probes:			
Surface type	605 only	22923	107.15
Immersion type		22924	107.15

* Clamp-on type

—Prices Are Suggested and Subject to Change Without Notice—

Simpson® Test Equipment Accessories

TEST LEADS, PROBES, CABLES



00125

00043

07500

Retractable Grip-Tip Lead
Probe Adapter, 6-13/16" Long,
for use with 00125 and 00043



Low-Power Ohms Probe
for 250, 255, 260, 261
and 270

Cat. No. 00735

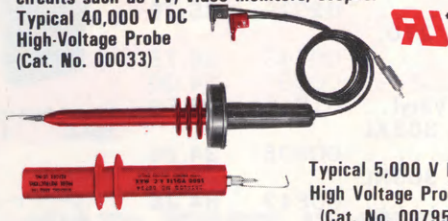
*UL Recognized

TEST LEADS, PROBES, CABLES

For Model	Description	Cat. No.	Price
160	Probe-tip leads	02055	\$ 6.75
	Alligator-clip leads	01927	6.50
202, 208, 209, 229-2, 250, 255, 260 Series 3-6 only, 260-XL, 261, 262 Series 3 only, 263, 265, 267, 268, 269 Series 2 & 3 only, 270, 360, 460, 464, 465.	Combination probe-tip and removable alligator- clip leads	00125	9.00
	Probe-tip leads	07538	7.75
	Alligator-clip leads	07500	7.00
	Retractable grip-tip probe adapters for use with 00125, 00043 leads	00118	8.50
230, 240, 260 Series 1 & 2 only, 372, 379	Probe-tip leads	08381	7.75
	Alligator-clip leads	08375	6.50
250, 255, 260, 261, 270	Low-power ohms probe	00735	51.25
256, 257	Combination probe-tip and removable alligator- clip leads	07541	8.50
260 Series 7	Leads/Clips	00043	9.00
262 Series 1 & 2 only, 269 Series 1 only	Combination probe-tip and removable alligator- clip leads	08463	6.25
295, 296	Clip-on probe	02227	4.75
	Extra leads	00041	5.50
303 Series 1 only, 651 (DC probe only— uses same grd. lead as 303-2)	DC Probe-tip lead	00067	11.75
	AC Probe-tip lead	00068	11.75
	Grd. lead (303-1 only)	00069	6.25
303 Series 3 only	AC/DC probe-tip lead (303-2, 312 only)	00150	25.00
311	AC/DC probe-tip lead	00175	24.75
313	AD/DC probe and grd.-clip lead	00189	24.00
314	X1/X10 AC/DC Probe and grd.-clip lead	00194	55.00
355	Probe-tip leads	08600	7.00
362, 371, 373, 374, 375, 376, 377, 378, 387	Probe-tip leads	08379	7.75
	Alligator-clip leads	08376	6.50
383A	Test lead assembly	07509	6.50
390	Break-in cord assembly	08418	15.75
390-2	Test lead set,	07543	16.50
	Break-in cord assembly	08418	15.75
455T, 452, 454 459	Shielded input cable	07549	11.50
	X1/X10 probe and cable assembly	00791	44.00
461, 462, 463	Combination probe tip and removable alligator clip leads	00043	9.00
466, 715	Shielded input cable	00100	10.00
604, 605	Test lead	07500	7.00
650	Test lead	07545	4.25

HIGH-VOLTAGE PROBES

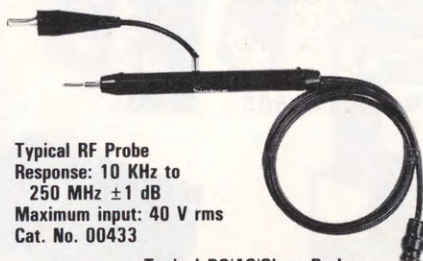
For low power high voltage, high impedance
circuits such as TV, video monitors, scopes.
Typical 40,000 V DC
High-Voltage Probe
(Cat. No. 00033)



Typical 5,000 V DC
High Voltage Probe
(Cat. No. 00795)

For Model	Voltage	Cat. No.	Price
260 Series 2	40,000 V DC	00033	\$40.00
250, 255, 260 Series 3, 4, 4M, 5, 5M, 5P, 6, 6M, 6P, 6XL, 6XLP, 261, 261 Series 2, 270, 270 Series 2, 3 and 4	10,000 V DC 10,000 V AC 40,000 V DC	00034 00036 00168	40.00
250, 255, 260-6, 260-6M, 260-6P, 6XL, 6XLP, 270-4	5,000 V DC 5,000 V AC	00795 00794	13.75 13.75
260-7	5,000 V DC 5,000 V AC 10,000 V DC 10,000 V AC 40,000 V DC	00795 00794 00412 00413 00411	13.75 13.75 40.00 40.00 40.00
262 Series 3	4,000 V DC 40,000 V DC	00796 00121	12.00 40.00
263	40 KV DC @ 10 KΩ/V or 20 KV DC @ 20 KΩ/V	00037	40.00
265	40,000 V DC	00168	40.00
269 Series 1	40,000 V DC	00039	40.00
269 Series 2 and 3	40,000 V DC	00066	40.00
303 Series 1 and 2	40,000 V DC	00727	40.00
311 Series 3	40,000 V DC	00725	40.00
312	40,000 V DC	00727	40.00
313 Series 2 and 3	40,000 V DC	00728	40.00
314	40,000 V DC	00729	40.00
461, 462, 463	40,000 V DC	00749	49.25
464, 465, 460-3, 460-4, 360-2, 303-3XL	40,000 V DC	00432	49.25

RF PROBES

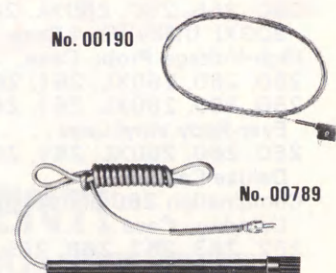


Typical RF Probe
Response: 10 KHz to
250 MHz ± 1 dB
Maximum input: 40 V rms
Cat. No. 00433

Typical DC/AC/Ohms Probe
Cat. No. 00150, 00175, 07594

For Model	Description	Cat. No.	Price
303 Series 1	DC probe	00067	\$11.75
	AC probe	00068	11.75
	High-Frequency (RF)	00073	25.00
303 Series 2	DC/AC/Ohms probe	00150	25.00
	High-Frequency (RF)	00073	25.00
303 Series 3	High-Frequency (RF)	00433	39.75
311 Series 1	DC/AC/Ohms probe	07594	23.50
	High-Frequency (RF)	00731	40.00
311 Series 2	DC/AC/Ohms probe	07594	23.50
	High-Frequency (RF)	00174	31.00
311 Series 3	DC/AC/Ohms probe	00175	24.75
	High-Frequency (RF)	00174	31.00
312	DC/AC/Ohms probe	00175	24.75
	High-Frequency (RF)	00152	25.00
	DC/AC/Ohms probe	00189	24.00
313 Series 2, 3	High-Frequency (RF)	00191	39.75
314	High-Frequency (RF) DC/AC/Ohms probe, (X1, X10)	00193 00194	23.00 55.00
400, 401, 405	Probe and clip, red, insulated with banana connections	00737	4.50
460-3, 464, 465	High-Frequency (RF)	00433	39.75
461, 462, 463	High-Frequency (RF)	00748	39.75

TEMPERATURE TESTER LEADS AND PROBES



No. 00190

No. 00789

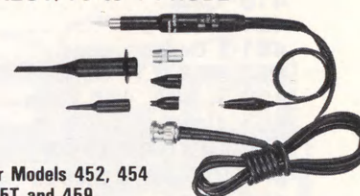
For Models 385-3L,
389-3L, 652

	Cat. No.	Price
Free air temperature probe	00789	\$27.00
15-ft. lead and thermistor	00010	23.75
30-ft. lead and thermistor	00216	23.75
50-ft. lead and thermistor	00415	25.50
100-ft. lead and thermistor	00416	31.00
150-ft. lead and thermistor	00417	38.75
Surface temperature probe	00790	21.50

Models 388, 388-3L, 255

388-3L, rugged service lead (8 ft.)	00496	20.00
388-3L, gen. purpose thermocouple probe	00190	20.00
388-3L surface temp. thermocouple (1000°F max.)	00187	25.50
255 only, thermocouple lead (5 ft.)	00163	14.00

DIRECT/10-to-1 PROBE



For Models 452, 454
455T and 459

Low-capacitance attenuator probe has
X1/REF/X10 selector switch
and shielded coax cable with
ground clip and BNC connector,
With IC, BNC, and insulating tip
adapters, trimmer tool, carrying
pouch.
Catalog No. 00791 \$44.00

METER SAFEGUARD



Offers the same meter movement
protection as built-in 260-6 and 7.
Installs in minutes. Complete in-
structions for 260 series 1, 2, 3,
4 and 5,
Cat. No. 12621 . . Pkg. 24*/\$96.60

* Available in single piece quantity
at distributor

Simpson® Test Equipment Accessories

CARRYING CASES

	Cat. No.	Price
150, 153, 154 Amp-Clamp Case	00548	\$15.75
160 Low-Cost Vinyl Case	02935	10.25
160 Vinyl Case	02225	21.50
160 Vacuum-Formed Case	02929	35.25
250, 255, 260, 260XL, 261, 265, 270, 303XL Utility Vinyl Case	00549	38.75
High-Voltage Probe Case	00804	14.00
250, 260, 260XL, 261, 265, 270 Vinyl . .	01818	28.00
250, 260, 260XL, 261, 265, 270, 303XL Ever-Redy Vinyl Case	00805	34.25
250, 260, 260XL, 261, 265, 270, 303XL Deluxe Case	00812	34.25
Combination 260 and Adapter Vinyl Carrying Case	01871	34.25
262, 263, 267, 268, 269, 388-3L Ever-Redy Vinyl Case	05262	30.50
294, 295, 296 Case	02226	27.50
313, 314 Vinyl Case	00577	33.00
355 Ever-Redy Vinyl Case	06355	11.75
360 Carrying Case	00815	38.00
360-2 Carrying Case	00816	39.75
380 Microwave Tester Case	00782	34.25
385-3L Ever-Redy Vinyl Case	08073	23.50
All Micro-Testers—Ever-Redy Vinyl Case (except Model 392)	04299	21.50
All Micro-Testers—Leatherette Covered Case (including Model 392)	00831	18.75
Roll-Top Safety Case for 260-2, Models 9, 10, 880's	06192	23.50
Roll-Top Case for 260-6, 7 Family and 270-4, 5	00248	25.75
Roll-Top Case for 260-3, 4, 5 Family, 250, 255, 261, 265, 270	00249	25.75
400 Vinyl Case	01615	28.25
401, 405 Vinyl Case	01616	31.75
408 Case	00809	30.50
408-2 Case	00819	30.50
410 Case	00811	35.00
431 Case	00817	11.50
461-2 Case	00814	27.00
461, 462, 710 Case	00747	29.50
460-3, 464, 465 Case	01617	40.25
463 Case	00813	25.50
884/886 Package Case	00217	56.75
SPONGE-LINED CASES		
313, 314 Leather-Covered Case	01565	38.00



Carrying Case for 150
#00548 . . . \$15.75



Low-Cost Vinyl Case
for 160
#02935 . . . \$10.25



Vacuum-Formed
Carrying Case for 160
#02929 . . . \$35.25



Vinyl Case for 250,
255, 260, 260XL,
261, 265, 270,
and 303 XL
#01818 . . . \$28.00



Ever-Redy Carrying
Case for 250, 255,
260, 260XL, 261,
270 and 303XL
#00805 . . . \$34.25



Deluxe Case for 260
family, 260-6XL
and 270-5
#00812 . . . \$34.25



Ever-Redy Carrying
Case for 262, 263,
267, 268, 269, 338-3L
and 389-3L
#05262 . . . \$30.50



Vinyl Case for 312,
313 and 314
#00577 . . . \$33.00



Leather Case for
Micro-Testers
#04299 . . . \$21.50



Roll-Top Safety Case
For 260-6 family
and 270-4
#00248 . . . \$25.75



Carrying Case for 360
#00815 . . . \$38.00



Vinyl Case for 461,
and 710
#00747 . . . \$29.50



884/886 Package Case
#00217 . . . \$56.75



Sponge Lined
Carrying Case
#01565 for 312, 313
and 314 . . . \$38.00



Vinyl Case for 460-3,
464, 465 and 420
#01617 . . . \$40.25

UTILITY CASE FOR 250, 255, 260, 260XL, 261, 265, 270 and 303XL

Ever-Redy Carrying Case (Cat. No. 00549) has extra space for accessories and/or tools. Probe Case (No. 00574) can be snapped on to this case to accommodate any of the high-voltage probes.
Cat. No. 00549 . . . \$38.75
Cat. No. 00574 . . . 11.75



PROTECTIVE COVER FOR SIMPSON 260® FAMILY OF VOMS

Made of tough, durable, vacuum-formed thermoplastic. Fits over the face of your Simpson VOM snugly, firmly—with an easy snap. Protects your VOM from dust, dirt and accidents. Black color, snap-fit cover for all 260 and 270 Series VOMs, except 260-6XL series. Package of 10. Available in single piece quantity at distributors.
Cat. No. 02163 . . . \$30.50



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at Simpson® It's a Way of Life!

- KNOW YOUR TEST INSTRUMENT!
- KNOW WHAT IT CAN AND CANNOT DO!
- KNOW THE CIRCUIT BEFORE YOU TEST IT!



Nobody but Simpson offers a choice of **29 UL-Listed** analog and digital test instruments, and a selection of matching, UL-Recognized accessories as well. Each one meets the UL-1244 Standard for Safety of Electrical and Electronic Measuring and Testing Equipment. Available at leading electrical and electronic distributors.

Write for free Catalog 5100 and special pamphlet "Straight Talk About UL-1244 Listed Test Instruments"



12 SIMPSON DIGITAL MULTIMETERS

460-4A	462	465-2A
460-4D	463	465-2D
461-2	464-2A	467
461-2R	464-2D	467B

3 SIMPSON AMP-CLAMP® TESTERS

294-2	295-2	296-2
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14 SIMPSON 260® VOMs

260-6XL	260-7	260-7PRT
260-6XLM	260-7M	260-7PMRT
260-6XLP	260-7MR	260-7RT
260-6XLPM	260-7P	270-5
	260-7PM	270-5RT



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KATY INDUSTRIES



ELECTRICAL EQUIPMENT
AND PRODUCTS GROUP

Simpson® Professional Test Equipment

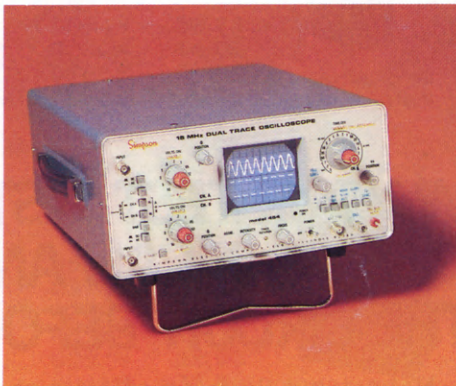
FUNCTION GENERATOR



Model 420 See Page 37

Sine, triangle, square wave, DC and TTL output. Choice of AC or AC/rechargeable battery models.

DUAL TRACE 3" PORTABLE INDUSTRIAL OSCILLOSCOPE



Model 454 See Page 38

Equally at home in the lab and in the field. For design and service applications.

NEW TRUE RMS DIGITAL MULTIMETER WITH DIGALOG™ DISPLAY



Model 467 See Page 26

A unique combination digital and analog LCD display, plus many more useful features.

260® SERIES 7 VOLT-OHM-MILLIAMMETERS



260 Series 7 See Page 40

All the advancements and features of the famous 260 Series 6, plus many new advantages.

4 1/2-DIGIT DIGITAL PANEL METER



Model 2840 See Page 3

Especially suited for system applications where extra .02% accuracy and 10 μ V resolution are needed.

AMP-CLAMP CLAMP-ON TESTERS



Model 296-2, See Page 50

Compact instrument for fast, easy electrical current tests without power line interruption.



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